

ESX-Cli

Command Console Guide



ESX-Cli – Command Console Guide, Version 4.3

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1 Overview

The Exponent Switches Command Line Interface (ESX-Cli) is a network management tool used in the configuration and management of the FORE Systems ESX family. You run the ESX utility interactively via a command shell that parses simple English-like commands and interprets them into management operations. You can run ESX-Cli locally on an NSC through the serial port or via Telnet. ESX-Cli also can operate in-band using an RPC communication channel.

1.1 Launching ESX-Cli

The ESX-Cli application is a Microsoft Console application that you can run using either a DOS console or the Windows NT Explorer. The ESX-Cli utility resides in the c:\winnt\system32 directory.

From DOS:

```
C:> ECLI.exe
```

```
FORE Systems, ESX-CLI Version 4.2 Build 207 Thu Oct 22 06:28:44 1998
```

```
CLI>
```

Optional Command Line Arguments:

-yes	Force a "yes" answer to all questions
-no	Force a "no" answer to all questions
\\<node>	Open a connection to a remote node

You can also launch ESX-Cli from the Windows Start menu by clicking ESX-Vision and selecting ESX-Cli.

1.2 Using Online Help

ESX-Cli has extensive online help that is available at any time from the command line or from the interactive shell. The help is hierarchical and displays an overview of the command and a usage example.

```
FORE Systems  ESX-CLI help Help
```

Syntax:

```
CLI> help
CLI> help ?
CLI> help <subsystem>
CLI> help <subsystem> <attribute>
```

Description:

```
ESX-CLI provides a simple online help facility. User can display commands,
```

subsystems and supported attributes per subsystem using the above syntax. Refer to the ESX-CLI reference manual for detailed explanations on operation, configuration examples and error messages.

1.3 Basic Command Syntax

The basic command syntax or parsing rules is described below:

```
CLI> <command> <subsystem> <instance> <flags> <attributes>
```

Where:

<command>	Is a primitive or action to be performed
<subsystem>	Is a managed subsystem on which the action is to be performed
<instance>	Is a unique instantiation of the target subsystem
<flags>	Are flags that define optional parameters
<attribute list>	Is a paired set of keyword tokens and values that identify the target object

Parsing is performed from left to right following two simple rules:

A command primitive must be the first token on the command line.

Instance and attribute lists must be paired. Each are defined as keyword tokens and values. For example: port 1a12 or group 5, mask 255.255.255.0.

Command parsing has no order dependency other than the two rules just described.

All commands require target instance information such as physical port, group number, or IP address.

You can enter a command, subsystem, or attribute using either a verbose keyword or a shortcut keyword or token. For example: verbose=configure, shortcut=cfg.

1.4 Command Primitives

A command primitive is an action to be performed. Configuration, statistics monitoring, rebooting are examples of primitives. The following ESX-Cli Help display includes a list of available primitives.

FORE Systems, ESX-CLI supported commands

Syntax:

```
CLI> <command> <subsystem> <instance> <flags> <attributes>
```

Description:

ESX-CLI is an interactive shell in which to perform configuration and statistics operations on managed entities. Commands are entered in plain text and can use verbose or shortcut keywords. A Command must be entered as the first keyword on a command line. Entities, and instance identifiers can be in any order. All attributes are comprised of pairs such as a <keyword> <value> combinations.

Verbose Keyword	Shortcut	Description
?	?	Display help text
add	add	Add operation, similar to config
begin	{	Begin atomic configuration
cd	cd	Change context
clear	clr	Clear event log
cls	cls	Clear the screen
configure	cfg	Perform configuration operations
copy	cp	Copy a file
date	date	Get and set system date
dc	dc	perform daisy chain hardware test
debug	debug	Enter diagnostic interface
dir	dir	Display directory files
disable	dis	Disable subsystem service
download	dl	Download via LCP
delete	del	Delete a configuration record
enable	ena	Enable subsystem service
end	}	End atomic configuration
erase	rm	Erase a file
exit	x	same as Quit
flush	f	Flush Bridge Fwd Table or ARP Cache
ftp	ftp	FTP Client
get	g	Get an environment variable
help	?	Display help text
history	h	Display command history
kill	k	Terminate an CLI session
load	ld	Load script or data file
monitor	mon	Continuous Display function
node-name	name	Configures Local System Name
ping	ping	Perform a ping operation
powercycle	powercycle	Power-cycle the switch
program	pgm	Reprogram LCP Flash Memory or FPGA
quit	q	Quit CLI and exit
read	rd	Perform LCP Read operations
reboot	boot	Reboot a local or remote node
rename	ren	Rename a file
reset	rst	Reset a slot
restore	re	Restore config
run	run	Execute downloadable program
save	sav	Save configuration state
set	s	Set an environment variable
show	sh	Display Configuration/Statistics
shutdown	halt	Shutdown a system, halts w/ no reboot
start	start	Start the Switching Services
stop	stop	Stop the Switching Services
test	test	Tests specified chips' RDRAM mem
time	time	Get and set the system time
traceroute	trace	Trace routed path to an IP host

type	cat	Type a text file to the console screen
verify	verify	Verify LCP Flash Memory
version	ver	Display Software Versions
wait	w	Delay execution for 'n' milliseconds
who	wh	Show all active CLI sessions
write	wr	Perform LCP Write operations

1.5 Subsystems

A subsystem is a class of managed objects that can be the targets of command primitives. The following is a list of supported subsystems.

FORE Systems, ESX-CLI Managed Subsystems

Syntax:

```
CLI> <command> <subsystem> <instance> <flags> <attributes>
```

Description:

The following table lists the currently available managed subsystems:

Verbose Keyword	Shortcut	Description
application-filter	filter	Application Filters
arp	arp	Address Resolution Protocol
bdm	bdm	Directory Manager configuration.
bridge	lb	Learning and Transparent Bridge
bsc	bsc	Switch Code Compiler
card	lc	Line Card management
chassis	ch	Chassis management
dhcp-relay	dhcp	DHCP Relay Agent
ethernet	enet	Ethernet Driver, 10/100mb & 1Gb
ip	ip	IP Configuration and Statistics
lcp	lcp	Line Card Processor management
log	log	Event Log management
mibII	mib	MIB-II Subsystem
nsc	nsc	Network Services Controller
ospf	ospf	OSPF Configuration and Statistics
policy	pol	Policy Filters, QOS management
port-map	pmap	Logical to Physical Port Mapping
rip	rip	RIP v1/v2 Configuration and Stats
service	svc	Service configuration.
snmp	snmp	SNMP and SNMP Trap configurations.
spanning-tree	spt	Spanning-Tree Configuration and Stats
static-route	sr	Static Routing
trunk	trunk	Trunk (Multi-Link) configurations.

FORE Systems, ESX-CLI Managed Subsystems

Syntax:

```
CLI> <command> <subsystem> <instance> <flags> <attributes>
```

Description:

The following table lists the currently available managed subsystems:

Verbose Keyword	Shortcut	Description
adsa	bdm	Advanced Directory Services Agent configurat ion.
application-filter	filter	Application Filters
arp	arp	Address Resolution Protocol
bridge	lb	Learning and Transparent Bridge
bsc	bsc	Switch Code Compiler
card	lc	Line Card management
chassis	ch	Chassis management
dhcp-relay	dhcp	DHCP Relay Agent
ethernet	enet	Ethernet Driver, 10/100mb & 1Gb

ip	ip	IP Configuration and Statistics
lcp	lcp	Line Card Processor management
log	log	Event Log management
mibII	mib	MIB-II Subsystem
nsc	nsc	Network Services Controller
ospf	ospf	OSPF Configuration and Statistics
policy	pol	Policy Filters, QOS management
port-map	pmap	Logical to Physical Port Mapping
rip	rip	RIP vl/v2 Configuration and Stats
service	svc	Service configuration.
snmp	snmp	SNMP and SNMP Trap configurations.
spanning-tree	spt	Spanning-Tree Configuration and Stats
static-route	sr	Static Routing
trunk	trunk	Trunk (Multi-Link) configurations.

ERROR (10000006): Invalid Subsystem (subsystems). Type help ? for list of valid subsystems.

1.6 Instance Identifiers

An instance identifier isolates an individual target or a configuration or statistic record in the form of physical ports, bridge groups, multilink groups, IP address or Mac address. Instance identifiers allow you to qualify display parameters for a group of statistics records. For example: Display all Ethernet statistics on slot 1 module a.

Following is a list of the supported instance identifiers:

Keyword	Value	Example	Description
Port	<slot><module><connector>	port 1b23	Physical port
Slot	1 through 8	slot 1	Chassis Slot
Module	A or B, 1 or 2	module a	Line Card Module
Connector	1 through 24	connector 24	PhysicalConnector
Group	1 through 'n'	group 5	L2 Bridge Group
Mlink	1 through 'n'	mink 2	L1 MultiLink Group
Address	w.x.y.z	addr 1.2.3.4	IP Address
	w.x.y.z/# bits	addr 1.2.3.4/24	Class C address
Maddr	xx:xx:xx:xx:xx:xx		Ethernet MAC
Adapter	1, 2, 3	adapter 1	NSC NIC Adapter
		adapter 2	OOB Management
		adapter 3	Switch Loopback
Mask			Subnet mask
Indx			Indexing by MIBII IfIndex value

1.7 Command Qualifiers

Command qualifiers are flags used on the command line to specify optional parameters to a command. Qualifiers are currently used only for LCP debugging operations. Supported qualifiers are listed below:

Flag	Description
-p	Targets packet memory
-I	Internal Memory
-c	Control Memory
-d	Direct Memory
-b	Buffer Memory
-v	Perform validation operations during write cycles
-ma<x>	Address Mask (64bit)
-md<x>	Data Mask (64bit)
-aa<x>	Auto Increment Address
-ad<x>	Auto Increment Data
-w<x>	Walking 1/0's
-n<x>	Iteration count
-r<x>	Command Repeat count

Refer to the LCP section for detailed description of qualifier usage.

1.8 Scripting

ESX-CLI can read commands from an ASCII file that you load either from the DOS prompt or from the interactive shell. Entering ESX-CLI commands through a file enables you to create an ASCII configuration file or test script targeted at one or more switch nodes.

Scripts can execute commands that load other script files. Recursion is not allowed, and as many as 100 script files may be open at one time.

From DOS:

```
C:\> ecli -f <script file>    Source a script file

C:\> ecli -f <script file>    Source script file against switch "SCP1"
```

From ESX-Cli Shell:

```
CLI> load <script file>    To execute script against current node

CLI> connect SCP1         or connect to node SCP1

CLI> load <script file>    Then execute the script
```

1.9 Environment Variables

Environment variables define the operating parameters of the ESX-Cli command shell. These variables are currently private only to the utility but will be accessible from a user profile. Use the Set command to set environment variables; use the Get command to display the current setting.

The current set of environment variables are as follows:

```
FORE Systems    ESX-CLI set Help
```

Syntax:

```
CLI> s|g <variable> <value>
CLI> set | get <variable> <value>
```

Description:

ESX-CLI supports environment variables which allow user control over the operation commands and subsystems. The current list of environment variables and allowed values are listed in the following table.

Variable	Value	Description
cpp	on off	Run C-Preprocessor[1] on script file
debug	on off	Turns on off debug messages.
halt	on off	Enables/Disables Halt on Error
lines	0 to 'n'	Number of event log records between prompts
width	1 to 'n'	Width of event log messages
refresh	1 to 'n'	Number of seconds for monitor refresh
poller	1 to 'n'	Number of seconds for Hardware status polling rate[2]
bWPoller	1 to 'n'	Number of seconds for Performance polling rate[3]

trace-mode	console	Turns on packet tracing function console display
	file	Turns on packet tracing function, redirect output to file
	both	Turns on packet tracing function, output to both file and console
more	none	Disables both file and console tracing functions
	on off	Displays only single screen at a time
com-port	com1	LCP Connection via Serial port 1
	com2	LCP Connection via Serial Port 2
	...	
	comn	LCP Connection via Serial Port n
version stamp	ether	LCP Connection via Ethernet port
	n/a	Display ESX-CLI version (build stamp)

Note[1]: This feature requires Microsoft CL.EXE loaded on client and is currently used only by FORE Systems Engineering.

[2]: The default value is 60 seconds.

[3]: The default value is 20 seconds.

1.10 Error Processing and Reporting

Error conditions are not typically fatal. When an error is encountered, a simple brief message along with an event code will be displayed. Refer to Section 6 for a complete list of error codes and their meanings.

If an error is encountered during the execution of a command from a script file, operation will only stop if the HALT environment variable has been set to ON. Default operation is OFF.

1.11 Debugging Modes

To facilitate debugging, there are two modes which you can invoke when you launch ESX-CLI:

- **Tracing:** Use the `-t` command-line argument to start a trace. Tracing allows you to record successful commands that were executed into an ASCII file for later playback.
- **Debug file:** Use the `-l` command-line argument to open a debug file. ESX-CLI writes errors to the file based on the logging level set in the environment variable LOGGING.

From DOS:

C:\> ecli -t <trace file> To open a trace file and record commands

C:\> ecli -l <debug log> To open a debug log of use to engineering

2 Command Primitives

2.1 Add

FORE Systems ESX-CLI add Help

Syntax

```
CLI> cfg <subsystem> <instance> <attribute list>
CLI> configure <subsystem> <instance> <attribute list>
```

Arguments:

```
<subsystem> Subsystem name, lb, enet, spt, chassis etc.
<instance> Specifies port,slot,module,connector,ifIndex,group
<attr list> Configuration attribute and value
```

Description:

This command is used to perform configuration operations on managed subsystems. The attribute list is a keyword value pair. Configuration requires use of an instance identifier. Instance identifiers supported:

```
adapter    '1' NSC NIC Adapter, '2' OOB Management, '3' Switch Loopback

port       Physical identifier in the format <slot><module><connector>
           which follows the syntax listed below. The identifier can also
           be a logical number as listed in the port-map table.

slot       Chassis slot number 1 to 8
module     Media card 'a' or 'b', can also use '1' or '2'
connector  Media card dependent, usually 1 to 24 or 1 to 3
group      Layer 2 Group number, 1 to 'n'
mlink      Layer 1 Group number used for load balancing
ifindex    Indexing by MIBII IfIndex Value
address    IP Address
mask       Subnet mask
maddr      Ethernet MAC address
```

Examples:

```
CLI> cfg ip address 1.1.1.1 port 1a1
CLI> cfg lb port 1a24
CLI> cfg lb group 1 port 2a24
CLI> cfg ip address 1.2.3.4 group 2
CLI> cfg ip address 4.3.2.1 mlink 5
CLI> cfg ethernet port 5a10 mtu 1514
CLI> cfg lcp slot 1 baud-rate 19200 parity none stop-bits 2
CLI> cfg filter port 1a24 ip-src 1.1.1.1 255.255.255.0 action drop
```

FORE Systems, ESX-CLI Managed Subsystems

Syntax:

```
CLI> <command> <subsystem> <instance> <flags> <attributes>
```

Description:

The following table lists the currently available managed subsystems:

Verbose Keyword	Shortcut	Description
adsa ion.	bdm	Advanced Directory Services Agent configurat ion.

application-filter	filter	Application Filters
arp	arp	Address Resolution Protocol
bridge	lb	Learning and Transparent Bridge
bsc	bsc	Switch Code Compiler
card	lc	Line Card management
chassis	ch	Chassis management
dhcp-relay	dhcp	DHCP Relay Agent
ethernet	enet	Ethernet Driver, 10/100mb & 1Gb
ip	ip	IP Configuration and Statistics
lcp	lcp	Line Card Processor management
log	log	Event Log management
mibII	mib	MIB-II Subsystem
nsc	nsc	Network Services Controller
ospf	ospf	OSPF Configuration and Statistics
policy	pol	Policy Filters, QOS management
port-map	pmap	Logical to Physical Port Mapping
rip	rip	RIP v1/v2 Configuration and Stats
service	svc	Service configuration.
snmp	snmp	SNMP and SNMP Trap configurations.
spanning-tree	spt	Spanning-Tree Configuration and Stats
static-route	sr	Static Routing
trunk	trunk	Trunk (Multi-Link) configurations.

2.2 begin

FORE Systems ESX-CLI begin Help

Syntax:

```
CLI> { or }
CLI> begin or end
```

Description:

Configuration operations which require multiple instructions, are required to be atomic in nature. During atomic operations, all configuration steps are stored and only when the end delimiter is set are they executed. A locking mechanism is used to prevent the interleaving of configuration operations between multiple management clients. Refer to the configuration manual for further details.

Example:

```
CLI> begin
CLI> cfg pmap port la24 slot 1 mod 1 con 1
CLI> cfg enet port la24
CLI> cfg ip port la24 addr 1.1.1.1
CLI> end
```

2.3 cd

FORE Systems ESX-CLI cd Help

Syntax

```
CLI> cd <subsystem> [<instance>]
```

Description:

The 'cd' command will change the ESX-CLI context to a particular subsystem helping to reduce the amount of typing required on the command line. Changing context carries with it slot and port information (port # is not displayed on the prompt). This removes the need to type subsystem name and instance id's when configuring attributes requiring multiple entries.

Examples:

```
CLI> cd lcp           // Change context to LCP
CLI_lcp> cd slot 1   // Change context to LCP for Slot 1
CLI_lcp_1> cd ..     // Backup to previous context level
CLI_lcp> cd lb       // Switch context from LCP to LB
CLI_lb> cd ..        // Backup to previous context level, this case root
CLI>
```

2.4 clear

FORE Systems ESX-CLI clear Help

Syntax:

```
CLI> clr log [app|sec|sys]
CLI> clear log [application|security|system]
```

Description:

The clear command allows the user to clear one of the three NT Event logs. The user is asked if they would like to generate a backup file and for confirmation that the specified log should be cleared.

2.5 cls

Native DOS clear screen function. Clears the shell screen and returns prompt to 0,0 coordinates.

FORE Systems ESX-CLI cls Help

Syntax:

```
CLI> clsCLI> help configure
```

Description:

Clear the screen.

Example:

```
CLI> cls
```

2.6 configure

FORE Systems ESX-CLI configure Help

Syntax

```
CLI> cfg <subsystem> <instance> <attribute list>
CLI> configure <subsystem> <instance> <attribute list>
```

Arguments:

<subsystem>	Subsystem name, lb, enet, spt, chassis etc.
<instance>	Specifies port,slot,module,connector,ifIndex,group
<attr list>	Configuration attribute and value

Description:

This command is used to perform configuration operations on managed subsystems. The attribute list is a keyword value pair. Configuration

requires use of an instance identifier. Instance identifiers supported:

```

adapter      '1' NSC NIC Adapter, '2' OOB Management, '3' Switch Loopback

port         Physical identifier in the format <slot><module><connector>
              which follows the syntax listed below. The identifier can also
              be a logical number as listed in the port-map table.

slot        Chassis slot number 1 to 8
module      Media card 'a' or 'b', can also use '1' or '2'
connector   Media card dependent, usually 1 to 24 or 1 to 3
group       Layer 2 Group number, 1 to 'n'
mlink       Layer 1 Group number used for load balancing
ifindex     Indexing by MIBII IfIndex Value
address     IP Address
mask        Subnet mask
maddr       Ethernet MAC address

```

Examples:

```

CLI> cfg ip address 1.1.1.1 port 1a1
CLI> cfg lb port 1a24
CLI> cfg lb group 1 port 2a24
CLI> cfg ip address 1.2.3.4 group 2
CLI> cfg ip address 4.3.2.1 mlink 5
CLI> cfg ethernet port 5a10 mtu 1514
CLI> cfg lcp slot 1 baud-rate 19200 parity none stop-bits 2
CLI> cfg filter port 1a24 ip-src 1.1.1.1 255.255.255.0 action

```

FORE Systems, ESX-CLI Managed Subsystems

Syntax:

```
CLI> <command> <subsystem> <instance> <flags> <attributes>
```

Description:

The following table lists the currently available managed subsystems:

Verbose Keyword	Shortcut	Description
adsa	bdm	Advanced Directory Services Agent configuration.
application-filter	filter	Application Filters
arp	arp	Address Resolution Protocol
bridge	lb	Learning and Transparent Bridge
bsc	bsc	Switch Code Compiler
card	lc	Line Card management
chassis	ch	Chassis management
dhcp-relay	dhcp	DHCP Relay Agent
ethernet	enet	Ethernet Driver, 10/100mb & 1Gb
ip	ip	IP Configuration and Statistics
lcp	lcp	Line Card Processor management
log	log	Event Log management
mibII	mib	MIB-II Subsystem
nsc	nsc	Network Services Controller
ospf	ospf	OSPF Configuration and Statistics
policy	pol	Policy Filters, QOS management
port-map	pmap	Logical to Physical Port Mapping
rip	rip	RIP v1/v2 Configuration and Stats
service	svc	Service configuration.
snmp	snmp	SNMP and SNMP Trap configurations.
spanning-tree	spt	Spanning-Tree Configuration and Stats
static-route	sr	Static Routing
trunk	trunk	Trunk (Multi-Link) configurations.

2.7 copy

FORE Systems ESX-CLI copy Help

Syntax:

```
CLI> copy <sourcefile> <destination>
```

Description:

Copy a file to another location. The destination path can be specified as either a file or directory. If a directory is specified, the file will be copied to that directory with the its current name.

Example:

```
CLI> copy config.txt oldconfig.txt
CLI> copy config.txt c:\temp
```

2.8 date

FORE Systems ESX-CLI date Help

Syntax:

```
CLI> date [<newdate>]
```

Description:

Display or set the system date. Use the date command with no parameter to display the system date. To set the date, specify a parameter in the form MM/DD/YYYY.

Example:

```
CLI> date
CLI> date 07/13/1998
```

2.9 debug

FORE Systems ESX-CLI debug Help

Syntax:

```
CLI> debug
```

Description:

Enter the FORE Systems diagnostic subsystem.

2.10 delete

FORE Systems ESX-CLI delete Help

Syntax:

```
CLI> del <subsystem> <instance>
CLI> delete <subsystem> <instance>
```

Description:

Any configuration record which can be created can also be deleted. The delete operation removes a configuration record permanently from the system. Note: To ensure consistent configuration results, the delete commands should be atomic.

Example:

```
CLI> del pmap port 4
CLI> del ip addr 4.4.4.4
```

2.11 dir

FORE Systems ESX-CLI dir Help

Syntax:

```
CLI> dir <directory>
```

Description:

Display the files and subdirectories in a directory.

Example:

```
CLI> dir
CLI> dir c:\temp
```

2.12 disable

FORE Systems ESX-CLI disable Help

Syntax:

```
CLI> dis enet port 1a1
CLI> dis ip addr 1.1.1.1 port 1b23
CLI> dis spt port 1a10
CLI> disable <subsystem> <instance>
```

Description:

The disable command is used to disable services provided by a subsystem. The disable primitive can also be used for attributes which have values that include the keyword disable. When displaying help tables, subsystems supporting the disable primitive will have keyword context which is displayed as 'dis'. For more information refer to the ESX-CLI reference manual.

2.13 download

FORE Systems ESX-CLI download Help

Syntax:

```
CLI> ld [<subsystem>|<file>] <inst> <device> <target> <filelo> [<filehi> <width>]
CLI> load [<subsystem>|<file>] <inst> <device> <target> <filelo> [<filehi> <width>]
```

Description:

The load command is used to perform out-of-band table loading or loading of a script file containing ESX-CLI commands. For table loading a valid <subsystem> name must be specified, otherwise the load command sources a script file. The <device> and <target> syntax is used to identify the address base of where the table is to be loaded. The <device> will point to a particular instance of an ASIC, while the <target> keyword indicates the table type.

NOTE: The loading of an ESX-CLI script file can only be executed from the root context level. ie: you must be at the CLI> prompt. Nesting of scripts is allowed, but the file stack is limited to 100 open files.

One option can be used with the load command is '-backup', which will not load any configuration commands for adapters.

LCP Device Table

Target	OFE	IFE	SE	Description
patricia	no	yes	no	IFE patricia lookup table
tree-root	no	yes	no	IFE tree-root table

The <filelo> and <filehi> args are used to load data into the ASIC memory. The <filehi> is optional, but requires a valid <width> argument.

Examples:

```
CLI> ld test.script
CLI> ld test.script -backup
CLI> ld lcp slot 1 ife 1 tree-root file.dat
CLI> ld lcp slot 1 ife 1 patricia file.dat file2.dat 32
FORE Systems  ESX-CLI download Help
```

Syntax:

```
CLI> ld [<subsystem>|<file>] <inst> <device> <target> <filelo> [<filehi> <width>]
CLI> load [<subsystem>|<file>] <inst> <device> <target> <filelo> [<filehi> <width>]
```

Description:

The load command is used to perform out-of-band table loading or loading of a script file containing ESX-CLI commands. For table loading a valid <subsystem>

name must be specified, otherwise the load command sources a script file. The <device> and <target> syntax is used to identify the address base of where the table is to be loaded. The <device> will point to a particular instance of an ASIC, while the <target> keyword indicates the table type.

NOTE: The loading of an ESX-CLI script file can only be executed from the root context level. ie: you must be at the CLI> prompt. Nesting of scripts is allowed, but the file stack is limited to 100 open files.

One option can be used with the load command is '-backup', which will not load any configuration commands for adapters.

LCP Device Table

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patricia	no	yes	no	IFE patricia lookup table
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The <filelo> and <filehi> args are used to load data into the ASIC memory. The <filehi> is optional, but requires a valid <width> argument.

Examples:

```
CLI> ld test.script
CLI> ld test.script -backup
CLI> ld lcp slot 1 ife 1 tree-root file.dat
CLI> ld lcp slot 1 ife 1 patricia file.dat file2.dat 32
```

2.14 enable

FORE Systems ESX-CLI enable Help

Syntax:

```
CLI> ena enet port 1a1
```

```
CLI> ena ip addr 1.1.1.1 port lb23
CLI> ena spt port la10
CLI> enable <subsystem> <instance>
```

Description:

The enable command is used to enable services provided by a subsystem. The enable primitive can also be used for attributes which have values that include the keyword enable. When displaying help tables, subsystems supporting the enable primitive will have keyword context which is displayed as 'ena'. For more information refer to the ESX-CLI reference manual.

2.15 end

FORE Systems ESX-CLI end Help

Syntax:

```
CLI> { or }
CLI> begin or end
```

Description:

Configuration operations which require multiple instructions, are required to be atomic in nature. During atomic operations, all configuration steps are stored and only when the end delimiter is set are they executed. A locking mechanism is used to prevent the interleaving of configuration operations between multiple management clients. Refer to the configuration manual for further details.

Example:

```
CLI> begin
CLI> cfg pmap port la24 slot 1 mod 1 con 1
CLI> cfg enet port la24
CLI> cfg ip port la24 addr 1.1.1.1
CLI> end
```

2.16 erase

FORE Systems ESX-CLI erase Help

Syntax:

```
CLI> erase <file>
```

Description:

Erase a file.

Example:

```
CLI> erase junkfile.txt
CLI> rm c:\temp\old.cfg
```

2.17 exit

FORE Systems ESX-CLI exit Help

Syntax:

```
CLI> quit
CLI> exit
```

Description:

The user can exit ESX-CLI shell by using either the quit or exit keywords.

2.18 flush

FORE Systems ESX-CLI flush Help

Syntax:

```
CLI> flush|clear <table>
CLI> f|clr <table>
```

Example:

```
CLI> flush arp|bridge
CLI> flush lb-fwd-tbl|lb-fwd
CLI> flush arp-cache|hosts
CLI> flush all
```

Description:

The flush command allows a user to remotely flush the bridge forwarding or ARP cache. Wildcard can be specified for all tables to be flushed.

2.19 ftp

FORE Systems ESX-CLI ftp Help

Syntax:

```
CLI> ftp [hostname]
```

Description:

Enter FTP client.

Example:

```
CLI> ftp
CLI> ftp 10.150.1.2
```

2.20 get

FORE Systems ESX-CLI get Help

Syntax:

```
CLI> s|g <variable> <value>
CLI> set | get <variable> <value>
```

Description:

ESX-CLI supports environment variables which allow user control over the operation commands and subsystems. For the current list of environment variables, see 1.9.

2.21 help

FORE Systems ESX-CLI help Help

Syntax:

```
CLI> help
CLI> help ?
CLI> help <subsystem>
CLI> help <subsystem> <attribute>
```

Description:

ESX-CLI provides a simple online help facility. User can display commands, subsystems and supported attributes per subsystem using the above syntax. Refer to the ESX-CLI reference manual for detailed explanations on operation, configuration examples and error messages.

2.22 history

FORE Systems ESX-CLI history Help

Syntax:

```
CLI> history
```

Description:

Display the command line history.

Example:

```
CLI> history
CLI> h
```

2.23 kill

FORE Systems ESX-CLI kill Help

Syntax:

```
CLI> kill <session>
```

Description:

Terminate an ESX-CLI session. Use the session id displayed by the who command to identify the session to be terminated.

Example:

```
CLI> kill 108
```

2.24 load

FORE Systems ESX-CLI load Help

Syntax:

```
CLI> ld [<subsystem>|<file>] <inst> <device> <target> <filelo> [<filehi> <width>]
CLI> load [<subsystem>|<file>] <inst> <device> <target> <filelo> [<filehi> <width>]
```

Description:

The load command is used to perform out-of-band table loading or loading of a script file containing ESX-CLI commands. For table loading a valid <subsystem>

name must be specified, otherwise the load command sources a script file. The <device> and <target> syntax is used to identify the address base of where the table is to be loaded. The <device> will point to a particular instance of an ASIC, while the <target> keyword indicates the table type.

NOTE: The loading of an ESX-CLI script file can only be executed from the root context level. ie: you must be at the CLI> prompt. Nesting of scripts is allowed, but the file stack is limited to 100 open files.

One option can be used with the load command is '-backup', which will not load any configuration commands for adapters.

LCP Device Table

Target	OFE	IFE	SE	Description
patricia	no	yes	no	IFE patricia lookup table
tree-root	no	yes	no	IFE tree-root table

The <filelo> and <filehi> args are used to load data into the ASIC memory. The <filehi> is optional, but requires a valid <width> argument.

Examples:

```
CLI> ld test.script
CLI> ld test.script -backup
CLI> ld lcp slot 1 ife 1 tree-root file.dat
CLI> ld lcp slot 1 ife 1 patricia file.dat file2.dat 32
```

2.25 monitor

FORE Systems ESX-CLI monitor Help

Syntax

```
CLI> mon <subsystem> <instance> <attribute>
CLI> monitor <subsystem> <instance> <attribute>
```

Description:

The monitor command performs display statistics or configuration information for a subsystem repeatedly. The refresh rate can be set from the command line using the set refresh command.

Examples:

```
CLI> set refresh 5            Configures refresh rate for 5 seconds
CLI> mon enet tx port *      Show ethernet transmit stats for all ports every 5 seconds
```

2.26 node-name

FORE Systems ESX-CLI node-name Help

Syntax:

```
CLI> name Switch Name
CLI> node-name Switch Name
```

Description:

The node-name or name command will configure the common system name for the local chassis. This is performed once at installation time when the user is logged in over the serial port. NOTE: Changes name of LOCAL machine.

2.27 ping

FORE Systems ESX-CLI ping Help

Syntax:

```
CLI> ping [-q] [-n#] [-f] [-l#] <ipaddress>
```

Description: Test IP reachability to a network host.

Options:

```
-q    Quiet mode, do not print notification of received packets.
-n#   Send # pings. Default is 10.
-f    Send pings forever.
-l#   Send # bytes per packet. Default is 60.
-d#   Delay # ms between echo requests. Default is 0.
      Note: hardware may pad to min ethersize.
      Note: hardware will add a 4 byte CRC.
```

Example:

```
CLI> ping 10.0.150.1
```

2.28 powercycle

FORE Systems ESX-CLI powercycle Help

Syntax

```
CLI> powercycle [<seconds> [<port>] [force]]
```

Description:

Power-cycles the switch. The port must be connected to the power module feeding the switch.

```
<seconds>    Number of seconds the power will be kept off
              Must be >= 1; the default value is 5 seconds
<port>       Port used to power-cycle (lpt1 -- default,.. comn)
force         Executes the command without confirmation
```

2.29 program

FORE Systems ESX-CLI program Help

Syntax

```
CLI> program lcp <inst> <file name>
CLI> pgm lcp <inst> <file name>
```

Description:

Programs the LCP flash image

```
<inst>      slot 'n'
<file name> name of the file containing the flash image
```

Examples:

```
CLI> program lcp slot 1 min.bin
CLI_lcp_1> program min.bin
```

2.30 quit

FORE Systems ESX-CLI quit Help

Syntax:

```
CLI> quit
CLI> exit
```

Description:

The user can exit ESX-CLI shell by using either the quit or exit keywords.

2.31 read

FORE Systems ESX-CLI read Help

Syntax

```
CLI> rd <flag> lcp <inst> <chip> <addr> [<count>][<exp>][<mask>]
CLI> read <flag> lcp <inst> <chip> <addr> [<count>][<exp>][<mask>]
```

Description:

This command is used to perform LCP Read operations on memory locations.

Mandatory Arguments are:

```
<flag>      -p Packet, -c Control, -i Indirect, -d Direct Memory Flags
<inst>      slot 'n' and/or port 'n'
<chip>      se, ife, ofe, ssram, phy, mac
<addr>      A text name for address base, or numeric value of address
```

Optional Arguments are:

```
<count>     Number of identical read cycles to perform
<exp>       Expected data word to perform validate operations
<mask>      Expected data word mask
```

Example(s):

```
CLI_lcp_1> rd -p se 1 0x10000
CLI_lcp_1> rd -i se 1 counters 1 0x12345678 0xffffffff
CLI_lcp_1> rd -c ife 1 0x200 1 0x0102030405060708 0xffffffffffffffff
```

2.32 reboot

FORE Systems ESX-CLI reboot Help

Syntax:

```
CLI> boot
CLI> reboot
```

Description:

The reboot or boot command will execute an orderly shutdown operation followed by a reboot of the NSC. The reboot will occur on the machine which is currently connected to ESX-CLI. The user will be prompted for confirmation.

2.33 rename

FORE Systems ESX-CLI rename Help

Syntax:

```
CLI> rename <oldname> <newname>
```

Description:

Rename a file.

Example:

```
CLI> rename config.txt config.bak
```

2.34 reset

FORE Systems ESX-CLI reset Help

Syntax

```
CLI> reset lcp <inst>
CLI> rst lcp <inst>
```

Soft-resets the slot

```
<inst> slot 'n'
```

2.35 restore

FORE Systems ESX-CLI restore Help

Syntax:

```
CLI> restore
CLI> restore defaults
```

Description:

'restore defaults' allows user to restore the all configurations back to the factory defaults. 'restore' does the something except that adapters are not restored back to the factory defaults.

2.36 run

FORE Systems ESX-CLI run Help

Syntax

```
CLI> run <subsystem> <instance> [<target> <flags> <address>] <file>
```

Description:

The run command allows the user to execute a subroutine program within a subsystem. The LCP entity supports download and execution of tests which are contained in external files supported by the <file> argument.

Examples:

```
CLI> run lcp slot 1 memory_test.exe
CLI> run lcp slot 1 ssram -d 0x100 ssram_test.exe
```

2.37 save

FORE Systems ESX-CLI save Help

Syntax:

```
CLI> save [<subsystem>] [<file>]
```

or

```
CLI> save log [app|sec|sys]
```

Description:

The save function will generate an ASCII configuration file which represents the current configuration state of a system. If no file name is specified on the command line, the name 'default.cfg' will be used. If no subsystem is specified, all subsystems' configurations are saved.

Saving the log subsystem saves a backup of the system event log.

2.38 set

FORE Systems ESX-CLI set Help

Syntax:

```
CLI> s|g <variable> <value>
CLI> set | get <variable> <value>
```

Description:

ESX-CLI supports environment variables which allow user control over the operation commands and subsystems. The current list of environment variables and allowed values are listed in the following table.

Variable	Value	Description
cpp	on off	Run C-Preprocessor[1] on script file
debug	on off	Turns on off debug messages.
halt	on off	Enables/Disables Halt on Error
lines	0 to 'n'	Number of event log records between prompts
width	1 to 'n'	Width of event log messages
refresh	1 to 'n'	Number of seconds for monitor refresh
poller	1 to 'n'	Number of seconds for Hardware status polling rate[2]
bWPoller	1 to 'n'	Number of seconds for Performance polling rate[3]
trace-mode	console	Turns on packet tracing function console display
	file	Turns on packet tracing function, redirect output to file
	both	Turns on packet tracing function, output to both file and console
	none	Disables both file and console tracing functions
more	on off	Displays only single screen at a time
com-port	com1	LCP Connection via Serial port 1
	com2	LCP Connection via Serial Port 2
	...	

		conn	LCP Connection via Serial Port n
	ether	LCP Connection via Ethernet port	
version			
stamp	n/a	Display ESX-CLI version (build stamp)	

Note[1]: This feature requires Microsoft CL.EXE loaded on client and is currently used only by FORE Systems Engineering.
 [2]: The default value is 60 seconds.
 [3]: The default value is 20 seconds.

2.39 show

FORE Systems ESX-CLI show Help

Syntax:

```
CLI> sh <subsystem> <instance> <attribute>
CLI> show <subsystem> <instance> <attribute>
```

Description:

The show command allows the user to display statistics or configuration information about a subsystem. Predefined displays for errors, packet statistics and hw/sw info can be generated. The user can filter the display based upon the instance arguments.

Examples:

```
CLI> show enet tx slot 1          Transmit counters for all ports on slot 1
CLI> show enet rx slot 1 module a Receive counters for ports on media card 'a'

CLI> show enet tx port 1a24      Transmit counters for port 1a24
CLI> show bridge slot 3 packets  Shows bridge packet stats for slot 3
CLI> show bridge group 1 err     Shows bridge error stats for group 1
CLI> show ip forwarding-table    Show IP Forwarding Table
```

2.40 shutdown

FORE Systems ESX-CLI shutdown Help

Syntax:

```
CLI> halt
CLI> shutdown
```

Description:

The shutdown or halt command will perform a Windows NT shutdown operation, flushing all data to the disk and stopping all system processes. This is required before performing hardware changes on the NSC. The shutdown operation will occur on the machine which is currently connected to ESX-CLI. The user will be prompted for confirmation.

2.41 start

FORE Systems ESX-CLI start Help

Syntax:

```
CLI> start
CLI> stop
```

Description:

The Start and Stop commands are used to control the routing and FORE Systems Networks Switch Code Compiler processes on the currently connected node.

Example:

```
CLI> start
CLI> stop
```

2.42 stop

FORE Systems ESX-CLI stop Help

Syntax:

```
CLI> start
CLI> stop
```

Description:

The Start and Stop commands are used to control the routing and FORE Systems Networks Switch Code Compiler processes on the currently connected node.

Example:

```
CLI> start
CLI> stop
```

2.43 time

FORE Systems ESX-CLI time Help

Syntax:

```
CLI> time [<newtime>]
```

Description:

Display or set the system time. Use the time command with no parameter to display the system time. To set the time, specify a parameter in the form HH:MM:SS.

Example:

```
CLI> time
CLI> time 10:15:00
```

2.44 traceroute

FORE Systems ESX-CLI traceroute Help

Syntax:

```
CLI> traceroute [options] <ipaddress> [data size]
```

Description: Print the route packets take to a network host.

Options:

```
-m max_ttl Set the max time-to-live used in outgoing probe
            packets. The default is 30.
-n          Print addresses numerically rather than symbolically.
-q nqueries Set number of probes per TTL. Default is 3 probes.
-s src_addr Use the following IP address (which must be given as
```

an IP number, not a hostname) as the source address in outgoing probe packets.

-v Verbose output.

-w wait Set the time (in seconds) to wait for a response to a probe. Default is 3 seconds.

Example:

```
CLI> traceroute 10.150.1.2
CLI> traceroute -v -n -w 2 192.168.0.38
```

2.45 type

FORE Systems ESX-CLI type Help

Syntax:

```
CLI> type <file>
```

Description:

Display the contents of a text file on the console.

Example:

```
CLI> type config.txt
```

2.46 verify

FORE Systems ESX-CLI verify Help

Syntax

```
CLI> verify lcp <inst> <file name>
```

Description:

Verifies that the LCP flash image matches the image file

<inst> slot 'n'
<file name> name of the file containing the flash image

Examples:

```
CLI> verify lcp slot 1 min.bin
CLI_lcp_1> verify min.bin
```

2.47 version

FORE Systems ESX-CLI version Help

Syntax

```
CLI> version
CLI> ver
```

Description:

Display current software versions running in the NSC, which includes LCP and Software.

2.48 wait

FORE Systems ESX-CLI wait Help

Syntax:

```
CLI> wait [<milliseconds>]
CLI> w [<milliseconds>]
```

Description:

The wait command is used to suspend execution of script commands. Use the wait command between successive script commands where needed to control execution time. The delay value is the time in milliseconds. If no delay value is specified, a default time of 1 second will be used.

Examples:

```
CLI> wait                    // default delay for 1 second
CLI> wait 100                // delays for 100 milliseconds
CLI> wait 2000               // delays for 2 seconds
```

2.49 who

FORE Systems ESX-CLI who Help

Syntax:

```
CLI> who
```

Description:

Show all active console sessions.

Example:

```
CLI> who
```

2.50 write

FORE Systems ESX-CLI write Help

Syntax

```
CLI> wr <flag> lcp <inst> <chip> <addr> <data> [<count>][<exp>][<mask>]
CLI> write <flag> lcp <inst> <chip> <addr> <data> [<count>][<exp>][<mask>]
```

Description:

This command is used to perform LCP Write operations on memory locations.

Mandatory Arguments are:

```
<flag>    -p Packet, -c Control, -i Indirect, -d Direct    Memory Flags
<inst>    slot 'n' and/or port 'n'
<chip>    se, ife, ofe, ssram, phy, mac
<addr>    A text name for address base, or numeric value of address
<data>    Data word, variable length up to 64 bits
```

Optional Arguments are:

```
<count>    Number of identical write cycles to perform
<exp>      Expected data word to perform validate operations
<mask>     Expected data word mask
```

Example(s):

```
CLI_lcp_1> wr -i se 1 counters 0x12345678
```

```
CLI_lcp_1> wr -p se 2 0x10000 0x1234 20
CLI_lcp_1> wr -c ife 4 0x2 0x0102030405060708 1 0x0102030405060708 0xffffffff
          fffffff
```

3 Subsystems

3.1 Active Directory Services Agent (ADSA)

FORE Systems ESX-CLI adsa Help

Syntax:

```
CLI> help adsa ?
```

Description:

ADSA subsystem supports configuration of FORE Systems Advanced Directory Services Agent. Advanced Directory Services Agent (ADSA) is needs to be functional for managing policies from a directory server.

```
CLI> help adsa ?
```

FORE Systems, ESX-CLI attributes for subsystem (adsa)

Verbose Keyword	Shortcut	Context	Description
configuration	cfg	show/monitor	Current ADSA Configuration
status	stat	show/monitor	Current ADSA Status
directory-server	dss	config	Configure DS Server for ADSA
port-no	dport	config	Configure Directory Port Number
user-dn	user	config	Directory User Name
password	pwd	config	Directory User Password
switch-prefix-dn	swc	config	Switch Container Prefix in the directory
pause-minutes	pause	config	Pause Time in Minutes
switch-dn	swdn	config	Switch DN in the directory
crypt-password	xpwd	config	Encrypted Directory User Password

3.2 Application-filter

FORE Systems, ESX-CLI attributes for subsystem (Application Filters)

Verbose Keyword	Shortcut	Context	Description
name	nam	all	Application Name
owner	owner	config	Application Filter Owner
port-type	type	all	Port type: static or dynamic
protocol-type	proto	all	Protocol Type: tcp, udp, both
server-port	server	all	Server Ports: up to 5 ranges
client-port	client	all	Client Ports: up to 5 ranges
server-name	sname	all	Server name or address: 10 max
configuration	cfg	show/monitor	Display configuration

3.3 ARP

FORE Systems ESX-CLI ARP Help

Syntax:

```
CLI> help arp ?
CLI> help arp <token>
```

Description:

The ARP subsystem allows the user to add, delete or modify an ARP host entry in the ARP table. This table also contains host statistics on the number of packets and octets a host has sent or received. The ARP configuration table allows the user to select whether the entry is static or dynamic, the Encapsulation type and a QOS level.

```
CLI> help arp config
```

FORE Systems ESX-CLI ARP Help

Syntax:

```
CLI> cfg arp port lal mac-address xx:xx:xx:xx:xx:xx addr w.x.y.z qos  
<private|network|high|best> type <static|dynamic>
```

Or

```
CLI> cfg arp port lal maddr xx:xx:xx:xx:xx:xx addr w.x.y.z qos  
<private|network|high|best> type <static|dynamic>
```

Description:

The ARP subsystem allows the user to statically add or delete host IP / MAC address entries. The ARP table also allows the user to keep track of host based statistics on the number of packets sent and received by that host. QOS levels can be set to a host effecting globally the quality of service that node can use.

FORE Systems ESX-CLI ARP Help

Syntax:

```
CLI> show arp table <address w.x.y.z> port <number|*|all>
```

Description:

Dumps the current ARP table as known by the switch hardware. This table contains the host IP address, Host MAC address, QOS, Encapsulation type and whether the entry is static (manually entered by user) or dynamic.

```
CLI> help arp packets
```

FORE Systems ESX-CLI ARP Help

Syntax:

```
CLI> show arp <packets|octets> port <number|all|*>  
CLI> show arp <packets|octets> address w.x.y.z
```

Description:

This command displays statistics counters which are also kept in the ARP table. The statistics contain packet counters per host entry in the table.

```
CLI> help arp type
```

FORE Systems ESX-CLI ARP Help

Syntax:

```
CLI> cfg arp mac-address xx:xx:xx:xx:xx:xx address w.x.y.z port lal type <dynamic|static>
```

Or

```
CLI> cfg arp maddr xx:xx:xx:xx:xx:xx addr w.x.y.z port lal type <dynamic|static>
```

Description:

Defines the entry type as either dynamic or static. Dynamic entries can be automatically changed in the table by new ARP's from hosts. Static entries are persistent and ARP's from the host are ignored.

```
CLI> help arp qos
```

FORE Systems ESX-CLI ARP Help

Syntax:

```
CLI> cfg arp mac-address xx:xx:xx:xx:xx:xx address w.x.y.z port lal qos
<private|network|high|best>
```

Or

```
CLI> cfg arp maddr xx:xx:xx:xx:xx:xx addr w.x.y.z port lal qos
<private|network|high|best>
```

Description:

The QOS allows a service level to be assigned globally to a host. All traffic to / from that host is switched following a given QOS class. It can be one of the following choices: private, network, high or best.

3.4 Berkeley Switch Code Compiler (BSC)

FORE Systems ESX-CLI Switch Code Compiler, (BSC) Help

FORE Systems, inc. BSC Syntax

Command Primitives supported by BSC

Primitive	Shortcut	Description
config	cfg	Configure LCP parameters for slot
display	dis	Display statistics or config info
show	sh	Display statistics or config info

Configuration and Display attributes:

Attribute	Shortcut	Context	Description
information	info	show/display	BSC hw/sw info
errors	err	show/display	BSC Error statistics
statistics	stats	show/display	BSC counter statistics
config	cfg	show/display	BSC configuration information
mgt-add	mgt-add	cfg	Configure NSC Control Interfaces: add ports
mgt-all	mgt-all	cfg	Configure NSC Control Interfaces: all ports
mgt-none	mgt-none	cfg	Configure NSC Control Interfaces: none ports
mgt-remove	mgt-rm	cfg	Configure NSC Control Interfaces: remove ports
mgt-only	mgt-only	cfg	Configure only specified port as NSC Control port

```
CLI> help bsc ?
```

FORE Systems, ESX-CLI attributes for subsystem (Switch Code Compiler, (BSC))

Verbose Keyword	Shortcut	Context	Description
information	info	show/monitor	Display BSC Information

statistics	stats	show/monitor	Display BSC Statistics
errors	err	show/monitor	Display BSC Error Packets Information
config	cfg	show/monitor	Display BSC Configuration
debug	dbg	all	Enable or Disable BSC Debug Port
mgt-add	mgt-add	config	Add BSC Management Ports
mgt-all	mgt-all	config	ALL are BSC Management Ports
mgt-none	mgt-none	config	No BSC Management Ports
mgt-remove	mgt-rm	config	Remove BSC Management Ports
mgt-only	mgt-only	config	Configure only 1 BSC Management Port
show	sh	help	
display	disp	help	

CLI> help bsc information

FORE Systems ESX-CLI Switch Code Compiler, (BSC) Help

FORE Systems, inc. BSC Display Syntax

Display Command Syntax:

```
CLI>show bsc <target> [<attr> <value>]
CLI>sh bsc <target> [<attr> <value>]
CLI>display bsc <target> [<attr> <value>]
CLI>disp bsc <target> [<attr> <value>]
```

Description:

The BSC display command allows the user to display statistics, errors and configuration etc information.

LCP Device Table

Target	Description
information	General Information, Id and Revision
errors	Error packet received
statistics	BSC statistics information
config	NSC port configuration

Examples:

```
CLI>sh bsc slot 1 cfg Display NSC ports on slot 1
CLI>disp bsc stats Display statistics on all slots
```

CLI> help bsc config

FORE Systems ESX-CLI Switch Code Compiler, (BSC) Help

FORE Systems, inc. BSC Configuration Syntax

Config Command Syntax:

```
CLI>configure bsc <attr> <value> [<attr> <value>]
CLI>cfg bsc slot 1 mgt-add port 1a5
```

Description:

Perform configuration operations on the BSC. Note that the LcpPortMap attribute is used by BSC to determine which ports are to send NSC Hellos. This information is written to both LCP and BSC.

Configuration attributes:

Attribute	Shortcut	Context	Description
-----------	----------	---------	-------------

```

-----
mgt-add      mgt-add  cfg      Configure NSC Control Interfaces: add ports
mgt-all     mgt-all  cfg      Configure NSC Control Interfaces: all ports
mgt-none    mgt-none  cfg      Configure NSC Control Interfaces: none ports
mgt-remove  mgt-rm    cfg      Configure NSC Control Interfaces: remove ports
mgt-only    mgt-only  cfg      Configure only specified port as NSC Control po
rt

```

Examples:

```

CLI>cfg bsc mgt-add port 1a8
CLI>cfg bsc mgt-all slot 1

```

```

CLI> help bsc debug

```

FORE Systems ESX-CLI Switch Code Compiler, (BSC) Help

Configuration Syntax:

```

CLI> enable bsc debug
CLI> disable bsc debug

```

Description:

BSC can be remotely debugged using a utility called BDP. To enable BDP communication the user must first enable BSC debugging. When BDP exits, BSC will automatically disable the debug port. The user may use the enable/disable primitives to control BSC debugging access.

3.5 Bridge

FORE Systems ESX-CLI Learning Bridge Help

Syntax:

```

CLI> help lb ?
CLI> help bridge ?

```

Description:

The learning bridge subsystem provides configuration and statistics access to the FORE Systems Learning Bridge software. The user can configure bridging functionality on a port or series of ports, and can group these ports into single or multiple bridge groups.

FORE Systems, ESX-CLI attributes for subsystem (Learning Bridge)

Verbose Keyword	Shortcut	Context	Description
config	cfg	show/monitor	Learning Bridge Configuration
delete	del	show/monitor	Delete Bridge Configuration
add	add	show/monitor	Learning Bridge Configuration
packets	pkts	show/monitor	Bridge Packet Counters
octets	octs	show/monitor	Bridge Octet Counters
fwd-table	fwd	show/monitor	Bridge Forwarding Table
errors	err	show/monitor	Bridge Learned Discard Counter
packet-rate	pps	show/monitor	Bridge Packet Rate
name	name	config	Bridge Name, text string
bridge-id	bid	config	Bridge ID, Priority + MAC
num-ports	ports	config	Number of ports on this Bridge
type	type	config	Type of Bridge, SRT, Transp.

3.6 Card

FORE Systems ESX-CLI Line Card Help

Syntax:

```
CLI> help lc ?
CLI> help card ?
```

Description:

The card token allows the user to configure and display statistics on the operational status of a line card within a chassis.

```
CLI> help card cfg
```

FORE Systems ESX-CLI Line Card Help

Syntax:

```
CLI> sh lc cfg slot <number|all|*>
CLI> show card config slot <number|all|*>
```

Description:

Used to display line card configuration for one or all slots in the system.

```
CLI> help card status
```

FORE Systems ESX-CLI Line Card Help

Syntax:

```
CLI> sh lc status slot <number|all|*>
CLI> show card status slot <number|all|*>
```

Description:

Used to display the line card statistics for one or all slots in the system.

```
CLI> help card id
```

FORE Systems ESX-CLI Line Card Help

Syntax:

```
CLI> cfg lc id <string>
CLI> config card card-id <string>
```

Valid ID's: 48Tx, 24TX3SX, 24TX, 8TX, 6SX

Description:

The card ID uniquely identifies the type of line card installed in a slot. The user should only have to configure this attribute during offline configuration editing sessions or when overriding. Normally this attribute is automatically set during bootup. Refer to the documentation for list of Module Types and the corresponding identification strings.

3.7 Chassis

FORE Systems ESX-CLI Chassis Help

Syntax:

```
CLI> help ch ?
CLI> help chassis ?
```

Description:

Chassis subsystem supports configuration of MIB-II system group variables, as well as access to the FORE Systems chassis configuration and statistics records.

FORE Systems, ESX-CLI attributes for subsystem (Chassis)

Verbose Keyword	Shortcut	Context	Description
configuration	cfg	show/monitor	Display chassis configuration
status	status	show/monitor	Display chassis status
information	info	show/monitor	Display chassis HW information
model-id	model	config	exponent Chassis type
unique-id	uid	config	Defines a UID for the chassis
description	desc	config	Text string describing chassis
contact	cont	config	Text string describing contact info
name	nam	config	Chassis node name
location	loc	config	Text string describing chassis location

```
CLI> help chassis config
```

FORE Systems ESX-CLI Chassis Help

Syntax:

```
CLI> sh ch cfg
CLI> show chassis config
```

Description:

The config attribute is used to display the current chassis configuration information. This includes Chassis Model Number, Revision, Serial Number, unique id. The MIB-II sysDecr, sysContact, sysName, sysLocation, and sysUpTime values are also displayed.

Variables:

Attribute	Shortcut	Record	Default	Acceptable Range
serial-number	ser	Global	Mfg. Set	Text String up to 255 bytes
model-number	model	Global	Mfg. Set	32 bit Integer
revision	rev	Global	Mfg. Set	32 bit Integer
unique-id	uid	Global	Mfg. Set	32 bit Hex Integer
description	desc	Global	Null	Text String up to 255 bytes
contact	cont	Global	Null	Text String up to 255 bytes
name	nam	Global	Null	Text string up to 255 bytes
location	loc	Global	Null	Text string up to 255 bytes

```
CLI> help chassis status
```

FORE Systems ESX-CLI Chassis Help

Syntax:

```
CLI> sh ch stat
CLI> show chassis status
```

Description:

Used to display the current operating status of a chassis. Chassis fan, temperature, power supply status is displayed along with the number of operational slots and port count.

CLI> help chassis model

FORE Systems ESX-CLI Chassis Help

Syntax:

```
CLI> cfg ch model <e, e4, e8, micro>
CLI> configure chassis model-id <e, e4, e8, micro>
```

Description:

Configure the chassis model-number. This number is the FORE Systems model, identification number printed on the rear panel of the system.

CLI> help chassis unique-id

FORE Systems ESX-CLI Chassis Help

Syntax:

```
CLI> cfg ch uid <hex number>
CLI> configure chassis unique-id <hex number>
```

Description:

Configure the chassis unique identification number. This number is used by some software protocols as a unique identifier of the chassis.

CLI> help chassis description

FORE Systems ESX-CLI Chassis Help

Syntax:

```
CLI> cfg ch desc <text string>
CLI> configure chassis description <text string>
```

Description:

A text string which is used to describe the chassis. This string matches the MIB-II sysDescr variable. The string can be up to 256 bytes in length.

CLI> help chassis contact

FORE Systems ESX-CLI Chassis Help

Syntax:

```
CLI> cfg ch cont <text string>
CLI> configure chassis contact <text string>
```

Description:

The contact name responsible for management or ownership of the system chassis. This string matches the MIB-II sysContact variable. The string can be up to 256 bytes in length.

CLI> help chassis name

FORE Systems ESX-CLI Chassis Help

Syntax:

```
CLI> cfg ch nam <text string>
CLI> configure chassis name <text string>
```

Description:

A name used to identify the chassis. This string matches the MIB-II sysName variable. The string can be up to 256 bytes in length.

```
CLI> help chassis location
```

FORE Systems ESX-CLI Chassis Help

Syntax:

```
CLI> cfg ch loc <text string>
CLI> configure chassis location <text string>
```

Description:

The current location of this system. This string matches the MIB-II sysLocation variable. The string can be up to 256 bytes in length.

3.8 DHCP-relay

FORE Systems ESX-CLI DHCP Relay Help

Detailed Help:

```
CLI> help dhcp-relay global
CLI> help dhcp-relay interface
```

Description:

This subsystem allows the user to configure support for the DHCP-Relay Agent within NT. A global configuration record is configured once per system. Interface records are create one per port and supports DHCP-Relay passthru mode.

```
CLI> help dhcp-relay ?
```

FORE Systems, ESX-CLI attributes for subsystem (DHCP Relay)

Verbose Keyword	Shortcut	Context	Description
global	gbl	all	DHCP Relay Global Control
interface	intf	all	DHCP Relay Interface Control

```
CLI> help dhcp-relay global
```

FORE Systems, ESX-CLI attributes for subsystem (Dhcp Global)

Verbose Keyword	Shortcut	Context	Description
log-level	log	config	Event logging level
servers	svr	all	List of DHCP servers
configuration	cfg	show/monitor	Display global configuration

```
CLI> help dhcp-relay interface
```

FORE Systems, ESX-CLI attributes for subsystem (Dhcp Interface)

Verbose Keyword	Shortcut	Context	Description
relay-mode	relay	cfg/ena/dis	DHCP Relay Mode: enable/disable

max-hops	hops	config	Maximum hops 1-16, default [4]
max-secs	secs	config	Timeout secs 0-32767 default [0]
configuration	cfg	show/monitor	Display interface configuration

3.9 Ethernet

FORE Systems ESX-CLI Ethernet Help

Syntax:

```
CLI> help enet ?
CLI> help ethernet ?
```

Description:

The Ethernet subsystem allows configuration and display operations to be performed on a single or multiple ports within a chassis. The user can configure interface speed, maximum MTU and whether or not the port is enabled or disabled. Statistics displays include packet, octet, error and collision counters.

FORE Systems, ESX-CLI attributes for subsystem (Ethernet)

Verbose Keyword	Shortcut	Context	Description
configuration	cfg	show/monitor	Display configuration
status	status	show/monitor	Display Port Status
link	link	show/monitor	Display Link State Map
tx-pkts	tx	show/monitor	Tx Packet counters
tx-octs	txo	show/monitor	Tx Octet counters
rx-pkts	rx	show/monitor	Rx Packet counters
rx-octs	rxo	show/monitor	Rx Octet counters
errors	err	show/monitor	Error summary
collisions	colls	show/monitor	Collision counters
packet-rate	pps	show/monitor	Transmit/Receive packets per second
state	state	cfg/ena/dis	Enable/Disable port
speed	spd	config	Interface Speed
duplex	dplx	config	Half,Full,Auto Duplex
conn-type	ctype	config	OOB Connection Types

```
CLI> help enet config
```

FORE Systems ESX-CLI Ethernet Help

Syntax:

```
CLI> cfg enet port <number> <attribute> <value>
CLI> configure ethernet port <number> <attribute> <value>
```

Description:

Performs configuration of Ethernet ports within a chassis. The configurable parameters are Speed, Duplexity, and whether the port is enabled or disabled.

Variables:

Attribute	Shortcut	Record	Default	Acceptable Range
state	state	Port	Enabled	Enabled/Disabled
speed	spd	Port	100mb	10mb, 100mb, 1gb
duplex	dplx	Port	Auto	Auto, Full, Half

3.10 Event Log

FORE Systems ESX-CLI Event Log Help

Syntax:

```
CLI> sh|clr|sav log [app|sec|sys]
CLI> show|clear|save log [application|security|system]
```

Description:

The event log for NT is split across three subsystems. Use the show log facility to display the event logs for application, security and system events which are stored in chronological order. Use the clear log facility to delete all event records from a specific log. Use the save log facility to backup a log file.

FORE Systems, ESX-CLI attributes for subsystem (Event Log)

Verbose Keyword	Shortcut	Context	Description
application	app	all	Display, clear, save application log
security	sec	all	Display, clear, save security log
system	sys	all	Display, clear, save system log

3.11 IP

FORE Systems ESX-CLI IP Help

Syntax:

```
CLI> help ip ?
CLI> help ip <token>
```

Description:

The IP subsystem provides configuration and statistics access to the Microsoft and FORE Systems Routing software. Command primitives allow the user to display IP routing statistics and forwarding table which are stored in switch hardware.

The following tables lists the display and configuration attribute names available for IP.

Name	Shortcut	Mode	Description
configuration	cfg	disp	Displays IP configuration
statistics	stats	disp	Displays IP Interface Statistics
forwarding-table	fwd-table	disp	Displays IP Forwarding Table
errors	err	disp	Displays IP traffic errors
mode	mode	cfg	Controls state of IP interface
address	addr	cfg	IP Address in dotted notation
mask	mask	cfg	Subnet mask in dotted notation
gateway	gate	cfg	Sets the Next Hop Gateway for OOB

Example(s):

```
CLI> show ip configuration
CLI> sh ip fwG-table
CLI> cfg ip port 1a1 addr 1.2.3.4/24 mode disabled
CLI> cfg ip port 3a23 addr 1.2.3.4 mask 255.255.255.0
CLI> cfg ip adapter 2 addr 10.2.3.4 mask 255.255.255.254 gate 10.0.0.20
```

CLI> help ip configuration

FORE Systems ESX-CLI IP Help

Syntax to configure attributes:

```
CLI> cfg ip address 1.2.3.4/24 port 1a23
```

```
CLI> cfg ip addr 1.2.3.4 mask 255.255.255.0 port 1a23
CLI> configure ip address [a.b.c.d|/bits] [mask w.x.y.z]
```

Description:

Performs IP configuration of ports within a chassis or adapters. The configurable parameters are address, mask, gateway, and reassembly. User must give IP address and instance.

Variables:

Attribute	Shortcut	Acceptable Range
address	addr	Dotted notation w.x.y.z or w.x.y.z/#bits
mask	mask	Dotted notation a.b.c.d
mode	mode	Enabled or Disabled
gateway	gate	Dotted notation, OOB adapter 2 only

Example(s):

```
CLI> cfg ip port 1a1 addr 5.6.7.8/24
CLI> cfg ip port 3a23 addr 1.2.3.4 mask 255.255.0.0
CLI> cfg ip adapter 3 addr 10.2.3.4/24 gateway 10.2.3.254
```

Syntax to display configurations:

```
CLI> sh ip cfg [slot|port <number|all|*>]
CLI> sh ip configuration [slot|port <number|all|*>]
```

Description:

Displays the current IP configuration on ports or adapters.

Example(s):

```
CLI> show ip configuration (defaults to port all)
CLI> show ip cfg port all
CLI> sh ip cfg adapter 3
```

3.12 Line Card

See 3.6 Card.

3.13 Line Card Processor (LCP)

```
CLI> help lcp
```

FORE Systems, ESX-LCP Syntax

Syntax:

```
CLI> help lcp
CLI> help lcp ?
CLI> help lcp baud
CLI> help lcp baud-rate
CLI> help lcp cfg
```

Description:

The LCP subsystem allows the user to configure the UART baud rate through either the serial port or ethernet link. The configurable rates are:

```
300
1200
2400
4800
9600
19200
38400
```

```
57600
115200
```

where 115200 is the default. NOTE, this operation will reset the board.

Config Command Syntax:

```
CLI>configure lcp slot 1 baud-rate integer
CLI>cfg lcp slot 1 baud 57600
CLI_lcp_1>cfg lcp baud 57600
FORE Systems  ESX-CLI LCP Syntax
```

Syntax:

```
CLI> help lcp
CLI> help lcp ?
CLI> help lcp baud
CLI> help lcp baud-rate
CLI> help lcp cfg
```

Description:

The LCP subsystem allows the user to configure the UART baud rate through either the serial port or ethernet link. The configurable rates are:

```
300
1200
2400
4800
9600
19200
38400
57600
115200
```

where 115200 is the default. NOTE, this operation will reset the board.

Config Command Syntax:

```
CLI>configure lcp slot 1 baud-rate integer
CLI>cfg lcp slot 1 baud 57600
CLI_lcp_1>cfg lcp baud 57600
```

```
CLI> help lcp baud
```

FORE Systems ESX-CLI LCP Configuration Syntax

Config Command Syntax:

```
CLI>cfg lcp slot 1 baud 57600
CLI_lcp_1>cfg lcp baud 57600
```

Description:

Perform configuration of the UART baud rate on the LCP. The following baud rates are supported: 300, 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200, where 115200 is the default. NOTE, this operation will reset the board.

3.14 Log

See 3.10 Event Log.

3.15 MIB-II

FORE Systems ESX-CLI MIB-II Help

Syntax:

```
CLI> help mib ?
CLI> help mib <token>
```

Description:

The MIB subsystem provides access to the standard MIB-II data storage within the NSC. The subsystem currently supports display/show access (read) only operations.

The following tables lists the display attribute names available for teh MIB-II.

Attribute Name	Shortcut	Mode	Description
interface-stats	if-stats	disp	MIB-II Interface Statistics
tcp-statistics	tcp-stats	disp	MIB-II TCP/IP Statistics
icmp-statistics	icmp-stats	disp	MIB-II ICMP Statistics
udp-statistics	udp-stats	disp	MIB-II UDP Statistics
forwarding-table	fwd-table	disp	MIB-II IP Forwarding Table
arp-table	arp-table	disp	MIB-II ARP resolution table
tcp-table	tcp-table	disp	MIB-II TCP/IP Connection table
udp-table	udp-table	disp	MIB-II UDP Connection table
interface-table	if-table	disp	MIB-II interface tables

Syntax:

```
CLI> sh mib attribute <instance> <number>
CLI> show mib attribute <instance> <number>
```

Example(s):

```
CLI> show mib if-stats
CLI> show mib slot 1 if-stats
CLI> sh mib fwd-table port 1a1
CLI> sh mib arp-table
```

3.16 Network Services Controller (NSC)

FORE Systems ESX-CLI Network Services Controller, (NSC) Help

Syntax:

```
CLI> help nsc ?
CLI> help nsc accounts
CLI> help nsc password
CLI> help nsc tracing
CLI> help nsc peer
```

Description:

The NSC subsystem allows the user to manage User accounts and passwords and includes the ability to enable and disable debug tracing. Use the above help commands for more information.

FORE Systems, ESX-CLI attributes for subsystem (Network Services Controller, (NSC))

Verbose Keyword	Shortcut	Context	Description
peer	peer	cfg/del/show	Configure Peer Machine Name
peer2	peer2	cfg/del/show	Configure Peer Machine Name
password	pwd	config	Modify User Password
accounts	acc	cfg/add/del/disp	Modify User Accounts
tracing	trc	all	Show, Enable or Disable Tracing

```
CLI> help nsc accounts
```

FORE Systems ESX-CLI Network Services Controller, (NSC) Help

NSC User Account Syntax:

```
CLI> add|delete|config|show nsc accounts
CLI> cfg nsc acc <username> [user-group <group-name>]
```

Description:

Management of account information for NSC Login operations can be performed via ESX-CLI. This is an interactive operation and is not scriptable. For security reasons, the user password is displayed as * characters. Change of a user account password is also done by giving an existing user account name in above commands.

CLI> help nsc password

FORE Systems ESX-CLI Network Services Controller, (NSC) Help

NSC User Password Syntax:

```
CLI> configure nsc password
CLI> cfg nsc pwd
```

Description:

Configuration of the administrator account password is an interactive operation and not scriptable. The user will be prompted for a new password, validation for new password. Passwords are displayed as * for each character typed for security reasons.

CLI> help nsc tracing

FORE Systems ESX-CLI Network Services Controller, (NSC) Help

NSC Tracing Syntax:

```
CLI> enable nsc tracing [<all|*>|<entity> <entity> ... <entity>]
```

Entities	Shortcuts	Description
bootp	bp	BOOTP Subsystem
ip-rip	ipr	IP RIP Protocol
ip-rip-mib	iprm	IP RIP SubAgent
ip-mgr	ipmgr	IP Protocol manager
ip-listener	ipl	IP Route Listener
mib-II	mib2	MIB-II SubAgent
ip-ospf	ospf	IP OSPF Protocol
ospf-mib	ospfm	IP OSPF SubAgent
router	rtr	Router Controller
sccm	sccm	Statistics Collector, Configuration Manager

```
CLI> enable nsc tracing OSPF
CLI> enable nsc tracing IPL OSPF SCCM
```

Description:

Tracing can be performed for debugging information which is directed to a file or a console buffer. To start tracing, you MUST execute one of following commands first:

```
CLI> set trace-mode console
CLI> set trace-mode file
CLI> set trace-mode both
```

Please refer to the NSC debugging and support manual for details.

CLI> help nsc peer

FORE Systems ESX-CLI Network Services Controller, (NSC) Help

NSC Peer Name Syntax:

```
CLI> configure nsc peer2 slave
      CLI> cfg nsc peer mymachine peer2 yourmachine
      CLI> sh nsc peer
```

Description:

Configuration of the peer NSC machine's name and display names.

3.17 OSPF

FORE Systems ESX-CLI OSPF Help

Detailed help use:

```
CLI> help ospf global ?
CLI> help ospf interface ?
CLI> help ospf area ?
CLI> help ospf area-range ?
CLI> help ospf neighbor ?
CLI> help ospf virtual ?
CLI> help ospf route-filter ?
CLI> help ospf protocol-filter ?
```

Description:

The OSPF subsystem has eight configuration record types which can be manipulated via ESX-CLI. Statistics displays and LSDB table display is currently unavailable in this release. Use the above commands for details on configuration.

OSPF requires a single global record be created and requires a unique ID that identifies the Router. This record needs to be created only once.

Interface records are created on a per port basis as needed. Defaults can be used for most normal operations.

Example(s):

```
CLI> cfg ospf global router-id 10.60.0.1 asbr Disabled log-level Warning
CLI> cfg ospf protocol-filter action only id rip
CLI> cfg ospf area area-id 30.30.30.30 auth-type Simple stub Yes metric 0 import Yes
CLI> cfg ospf area area-id 20.20.20.20 auth-type Simple stub No metric 0 import Yes
CLI> cfg ospf area-range area-id 10.10.10.10 range-net 10.60.0.0 range-mask
      255.255.0.0
CLI> cfg ospf interface port la6 addr 10.60.6.6/24 area-id 0.0.0.0 type broadcast
      pri 1 tdly 15 retrans-int 20 hello-int 30 dead-int 40 poll-int 50 cost 2 pwd
      12345678 mtu 1500
CLI> cfg ospf neighbor port la2 nbr-address 10.60.2.20 address 10.60.2.6 priority 12
CLI> cfg ospf virtual transit-area-id 20.20.20.20 nbr-rtr-id 10.60.2.60
      transit-delay 99 retrans-int 55 hello-int 30 dead-int 20 password 12345678
```

CLI> help ospf global

FORE Systems, ESX-CLI attributes for subsystem (OSPF Global)

Verbose Keyword	Shortcut	Context	Description
router-id	id	all	OSPF Global Router ID
ASBdrRouter	asbr	cfg/ena/dis	OSPF Global ASBR Mode
log-level	log	cfg/ena/dis	OSPF Global Event Logging Level
configuration	cfg	show/monitor	OSPF Global Configuration Display

```
CLI> help ospf interface
```

```
FORE Systems, ESX-CLI attributes for subsystem (OSPF Interface)
```

Verbose Keyword	Shortcut	Context	Description
area-id	id	cfg/add/del	OSPF Interface Area ID
type	type	all	OSPF Interface Type
priority	pri	all	OSPF Interface Router Priority
transit-delay	tdly	all	OSPF Interface Transit Delay
retrans-int	retr	all	OSPF Interface Retransmit Interval
hello-int	hello	all	OSPF Interface Hello Interval
dead-int	dead	all	OSPF Interface Dead Interval
poll-int	poll	all	OSPF Interface Poll Interval
metric-cost	cost	all	OSPF Interface Metric Cost
password	pwd	all	OSPF Interface Password
mtu-size	mtu	all	OSPF Interface MTU Size
configuration	cfg	show/monitor	OSPF Interface Config Display

```
CLI> help ospf area
```

```
FORE Systems, ESX-CLI attributes for subsystem (OSPF Area)
```

Verbose Keyword	Shortcut	Context	Description
area-id	id	cfg/add/del	OSPF Area ID
auth-type	auth	all	OSPF Area Authentication Type
stub-area	stub	all	OSPF Area Stub enable
stub-metric	metric	all	OSPF Area Stub Metric
import-adv	import	all	OSPF Area Import summary adv.
configuration	cfg	show/monitor	OSPF Area Configuration Display
table	tbl	show/monitor	OSPF Area Table Display

```
CLI> help ospf neighbors
```

```
FORE Systems, ESX-CLI attributes for subsystem (OSPF Neighbors)
```

Verbose Keyword	Shortcut	Context	Description
nbr-address	naddr	cfg/add/del	OSPF Neighbor IP Address
address	addr	cfg/add/del	OSPF Neighbor Interface Address
priority	pri	all	OSPF Neighbor Priority
configuration	cfg	show/monitor	OSPF Neighbor Configuration
table	tbl	show/monitor	OSPF Neighbor Table Display splay

```
CLI> help ospf area-range
```

```
FORE Systems, ESX-CLI attributes for subsystem (OSPF Area Range)
```

Verbose Keyword	Shortcut	Context	Description
area-id	id	cfg/add/del	OSPF Area ID
range-net	net	cfg/add/del	OSPF Area Range Network Address
range-mask	mask	cfg/add/del	OSPF Area Range Subnet Mask
configuration	cfg	show/monitor	OSPF Area Range Config Display

```
CLI> help ospf virtual
```

```
FORE Systems, ESX-CLI attributes for subsystem (OSPF Virtual Interface)
```

Verbose Keyword	Shortcut	Context	Description
transit-area-id	tid	cfg/add/del	OSPF Virtual Transit ID
nbr-rtr-id	nid	cfg/add/del	OSPF Virtual Nbr Router ID
transit-delay	tdly	all	OSPF Virtual Transit Delay
retrans-int	retr	all	OSPF Virtual Retransmit Interval
hello-int	hello	all	OSPF Virtual Hello Interval
dead-int	dead	all	OSPF Virtual Dead Interval

```
password      pwd          all          OSPF Virtual Password
configuration cfg         show/monitor OSPF Virtual Interface Config
```

CLI> help ospf route-filter

FORE Systems, ESX-CLI attributes for subsystem (OSPF Route Filters)

Verbose Keyword	Shortcut	Context	Description
route-address	route	cfg/add/del	OSPF Route Filter Address
route-mask	rmask	cfg/add/del	OSPF Route Filter Subnet Mask
action	act	cfg/add/del	OSPF Route Filter Action
configuration	cfg	show/monitor	OSPF Route Filter Config Display

CLI> help ospf protocol-filter

FORE Systems, ESX-CLI attributes for subsystem (OSPF Protocol Filters)

Verbose Keyword	Shortcut	Context	Description
protocol-id	id	cfg/add/del	OSPF Protocol Filter Protocol ID
action	act	cfg/add/del	OSPF Protocol Filter Action
configuration	cfg	show/monitor	OSPF Protocol Filter Config

3.18 Policy

FORE Systems ESX-CLI policy Help

Policy Filters Help

Description:

Configuration attributes for the application filter:

Verbose Keyword	Shortcut	Context	Description
name	nam	cfg/add/del/disp	Application Policy Name
policy-port	pport	cfg/del/add	Ports Applied This Policy
policy-type	type	cfg/add	Policy Type: security, etc
policy-mode	mode	cfg	Policy Mode: enabled, Disabled, etc
policy-action	act	cfg	Policy Action: Default, Drop, etc
target-port	tport	cfg	Policy Destion Port or IP addresses
application-filter	filter	cfg/del/add	Application Filter Name
configuration	cfg	show	Display configuration

Certain restrictions apply when configuring the policy-type, policy-action and target-port as follows.

Policy-Type	Policy-Action	Target-Port
security	route	IP addr: 1.2.3.4,5.6.7.8
	balance	IP addr: 1.2.3.4,5.6.7.8
	forward	Physcial port: 1a1
specific-default	default	Ignored
	drop	Ignored
	high	Ignored
	low	Ignored
	forward	Physcial port: 1a1
	route	IP addr: 1.2.3.4
	balance	IP addr: 1.2.3.4,5.6.7.8
global-enforced	same as specific-default	

```
global-default      same as specific-default
```

```
Example(s):
```

```
CLI> cfg policy name "aaa" policy-port all policy-type specific-default policy-mode
enabled policy-action forward target-po
rt lal application-filter "abc"
CLI> del policy name "aaa" application-filter "cde"
CLI> sh policy name "aaa" info
CLI> sh policy configuration
CLI> cfg policy name "ccc"
```

3.19 Port Map

```
CLI> help pmap
```

```
FORE Systems  ESX-CLI Port Map Help
```

```
Syntax:
```

```
CLI> help pmap ?
CLI> help port-map ?
```

```
Description:
```

The port-map configuration record maps logical ports to physical ports. Subsystems records use logical port or group numbers as keys. These logical numbers are mapped to a physical connector on the chassis via the port map table. This allows configuration moves to be performed on the port map table vs. reconfiguring the records assoc. with each subsystem.

```
FORE Systems, ESX-CLI  attributes for subsystem (Port Map)
```

Verbose Keyword	Shortcut	Context	Description
configuration	cfg	show	Displays the port map configuration table
type	typ	config	Logical port type, physical, trunk, bridge
group			
port	prt	config	The logical port number
slot	slt	config	Slot number of line card
module	mod	config	Media Module number
connector	con	config	Physical Connector Number
group	grp	config	L2 Bridge Group Number
trunk	trunk	cfg/add/del	L1 Trunk Group Number
ifindex	indx	config	Sets the ifIndex field

```
CLI> help port-map configuration
```

```
FORE Systems  ESX-CLI Port Map Help
```

```
Syntax:
```

```
CLI> cfg pmap slot <x> mod <l|2> con <y> port <z> [group <i> ifIndex <j> trunk <k>]
CLI> config port-map slot <x> module <l|2> connector <y> port <z>
```

```
Description:
```

Configuration of the port map requires the logical port number and assigns this number to a group, slot/module/connector. The following table explains each variable:

Keyword	Shortcut	Range	Description
slot	slot	1 to 8	Identifies a slot
module	mod	1 or 2	Identifies motherboard or daughter board
connector	con	1 to 48	Identifies the unique connector number
group	grp	1 to 'n'	Identifies a L2 Bridge Group
trunk	trunk	1 to 'n'	Identifies a L1 Trunk Group

ifIndex	indx	1 to 'n'	Maps logical port to MIB-II ifIndex
type	typ	Physical	Logical port mapped directly to physical
		L1Group	Logical port member of L1 Trunk Group
		L2Group	Logical port is member of L2 Bridge Group

3.20 RIP

FORE Systems ESX-CLI RIP Help

Routing Information Protocol (RIP) Help

Syntax:

```
CLI> help rip ?
CLI> help rip <area>
CLI> help rip <area> <token>
```

Description:

The RIP subsystem provides configuration and statistics operations on RIP records. The following tables lists the display and configuration subarea names available for the RIP system.

Name	Shortcut	Description
global	gbl	Global RIP Control Area
interface	intf	Interface RIP Control Area
protocol	proto	RIP Interface Protocol Options Area
timers	time	RIP Interface Protocol Timers Area
accept-filter	acpt	Interface Accept Filters Area
announce-filter	ann	Interface Announce Filters Area
unicast-peers	ucast	Interface Unicast Peers Area

For each subarea, there are different configuration and display commands available. For more configuration, use 'help rip <area>' command.

FORE Systems, ESX-CLI attributes for subsystem (RIP)

Verbose Keyword	Shortcut	Context	Description
global	gbl	all	Global control
interface	intf	all	Interface control
protocol	proto	all	Interface protocol options
timers	time	all	Interface protocol timers
accept-filter	acpt	all	Interface Accept Filters
announce-filter	ann	all	Interface Announce Filters
unicast-peers	ucast	all	Interface Unicast Peers

FORE Systems, ESX-CLI attributes for subsystem (RIP Global)

Verbose Keyword	Shortcut	Context	Description
log-level	log	config	RIP Event logging level
update	int	config	Triggered update interval
peer-mode	mode	config	Peer Mode, disable, include, exclude
peers	peer	cfg/add/del	Peer RIP Servers list
configuration	cfg	show/monitor	Display RIP Global Configuration

FORE Systems, ESX-CLI attributes for subsystem (RIP Interface)

Verbose Keyword	Shortcut	Context	Description
cost	cost	config	RIP Interface Metric (cost)
update-mode	update	cfg/ena/dis	Enable or Disable Periodic Updates
accept-mode	accept	cfg/ena/dis	Protocol version accepted
announce-mode	announce	cfg/ena/dis	Protocol version announced
authentication	auth	config	Mode of authentication
password	pwd	config	Password for Authentication
periodic	per	config	Announcement timer interval

expire	exp	config	Route expiration timer
remove	rem	config	Route removal timer
route-tag	tag	config	Route Tag
peer-filter	peer	config	Unicast Peer Mode
accept-filter	accflt	config	Accept Filtering Mode
announce-filter	annflt	config	Announce Filtering Mode
configuration	cfg	show/monitor	Display interface configuration

CLI> help rip protocol

FORE Systems, ESX-CLI attributes for subsystem (RIP Interface Protocol Options)

Verbose Keyword	Shortcut	Context	Description
split-horizon	split	all	Enable/Disable Split Horizon
poison-reverse	poison	all	Poison Reverse (uses Split-Horizon)
triggered-updates	tu	all	Triggered Updates
clean-up	cl	all	Clean Up updates when stopping
override	or	all	Override non-RIP routes with RIP
rx-host-routes	rxh	all	Process host routes received
tx-host-routes	txh	all	Include host routes in packets sent
rx-default-routes	rxd	all	Process defaults routes received
tx-default-routes	txd	all	Include default routes in packets sent
configuration	cfg	show/monitor	Display RIP Protocol options

FORE Systems, ESX-CLI attributes for subsystem (RIP Interface Timers)

Verbose Keyword	Shortcut	Context	Description
periodic	per	config	Periodic announcement timer
expire	exp	config	Route expiration timer
remove	rem	config	Route removal timer
configuration	cfg	show/monitor	Display RIP Timers

CLI> help rip accept-filter

FORE Systems, ESX-CLI attributes for subsystem (RIP Interface Accept Filters)

Verbose Keyword	Shortcut	Context	Description
mode	mode	config	Accept filtering mode
filter-range	filter	cfg/add/del	Filter from a.b.c.d to w.x.y.z
configuration	cfg	show/monitor	Display interface accept filters

CLI> help rip announce-filter

FORE Systems, ESX-CLI attributes for subsystem (RIP Interface Announce Filters)

Verbose Keyword	Shortcut	Context	Description
mode	mode	config	Announce filtering mode
filter-range	filter	cfg/add/del	Filter from a.b.c.d to w.x.y.z
configuration	cfg	show/monitor	Display interface announce filters

CLI> help rip unicast-peer

FORE Systems, ESX-CLI attributes for subsystem (RIP Interface Unicast Filters)

Verbose Keyword	Shortcut	Context	Description
mode	mode	config	Unicast filtering mode
filter	filter	cfg/add/del	Unicast filter entry, filter a.b.c.d
configuration	cfg	show/monitor	Display interface unicast filters

For help on each token, type: `help rip <area> <token>`

3.21 Service

FORE Systems ESX-CLI service Help

Description:

The service subsystem provides configuration and management access to the networking services running on the NSC. Command primitives allow the user to display service configuration and to enable and disable the services.

The following table lists the attribute names available for the service subsystem.

Name	Shortcut	Mode	Description
configuration	cfg	disp	Displays service configuration

Example:

```
CLI> sh svc cfg
```

3.22 SNMP

FORE Systems ESX-CLI SNMP Help

FORE Systems, inc. SNMP Syntax

Detailed help use:

```
CLI> help snmp ?
CLI> help snmp agent ?
CLI> help snmp traps ?
CLI> help snmp security ?
```

Description:

The SNMP subsystem has four configuration record types which can be manipulated via ESX-CLI. Use the above commands for details on configuration.

Example(s):

```
CLI> cfg snmp agent name test1 location null physical ena appli ena link dis
internet ena end-to-end ena
CLI> cfg snmp traps comm public dest 1.2.3.4
CLI> cfg snmp security send-auth ena acpt-com test1 host 2.3.4.5
CLI> sh snmp info
```

You can start or stop the SNMP service by the following commands:

```
CLI> cfg snmp start
CLI> cfg snmp stop
```

You can start or stop the SNMP Trap service by the following commands:

```
CLI> cfg snmp start-trap
CLI> cfg snmp stop-trap
```

```
CLI> help snmp ?
```

FORE Systems, ESX-CLI attributes for subsystem (SNMP)

Verbose Keyword	Shortcut	Context	Description
agent	agent	all	SNMP Agent Configuration

traps	trap	all	SNMP Traps Configuration
security	secu	all	SNMP Security Configuration
start	start	config	Start SNMP
stop	stop	config	Stop SNMP
start-trap	start-trap	config	Start SNMP Traps
stop-trap	stop-trap	config	Stop SNMP Traps
configuration	cfg	show/monitor	SNMP Configuration Display
show	sh	help	Show Command Help

```
CLI> help snmp agent ?
```

FORE Systems, ESX-CLI attributes for subsystem (SNMP Agent)

Verbose Keyword	Shortcut	Context	Description
name	name	config	Set SNMP Agent Name
location	loca	config	Set SNMP Agent Location
physical	phys	cfg/ena/dis	SNMP Agent Configuration
application	appl	cfg/ena/dis	SNMP Agent Configuration
link	link	cfg/ena/dis	SNMP Agent Configuration
internet	intn	cfg/ena/dis	SNMP Agent Configuration
end-to-end	ends	cfg/ena/dis	SNMP Agent Configuration

```
CLI> help snmp traps ?
```

FORE Systems, ESX-CLI attributes for subsystem (SNMP Trap)

Verbose Keyword	Shortcut	Context	Description
community	comm	cfg/add/del	Set SNMP Traps Community Name
destination	dest	cfg/add/del	Set SNMP Traps Destination Address
polling	poll	all	Set SNMP Traps Polling Period

```
CLI> help snmp security ?
```

FORE Systems, ESX-CLI attributes for subsystem (SNMP Security)

Verbose Keyword	Shortcut	Context	Description
send-auth	auth	cfg/ena/dis	Enable/disable SNMP Send-Auth Traps
acpt-com	acpt	cfg/add/del	Configure Accepted Community Names
all-host	all	cfg/ena	Accept Packets from All Hosts
hosts	hosts	cfg/add/del	Configure Accepted Host Addresses

3.23 Spanning Tree

FORE Systems ESX-CLI Spanning-Tree Help

Syntax:

```
CLI> help spt ?
CLI> help spanning-tree ?
```

Description:

The Spanning-Tree protocol can be configured to run over a bridge group. The managed entity allows configuration and statistics operations on a port or group basis.

FORE Systems, ESX-CLI attributes for subsystem (Spanning-Tree)

Verbose Keyword	Shortcut	Context	Description
configuration	cfg	show/monitor	Display port or group configuration
statistics	stats	show/monitor	Display port or group statistics
priority	pri	config	Global Spanning-Tree Priority
max-age	age	config	Global Spanning-Tree Max Age
hello-time	hello	config	Global Spanning-Tree Hello Time
fwd-delay	dly	config	Global Spanning-Tree Forwarding Delay

port-priority	ppri	config	Port Priority
state	state	config	Port Enable/Disable
path-cost	cost	config	Port Path Cost

3.24 Static Routes

FORE Systems ESX-CLI Static Routes Help

Syntax:

```
CLI> help static-route ?
CLI> help sr ?
CLI> help static-route <token>
CLI> help sr <token>
```

Description:

The Static Route subsystem provides configuration and statistics operations on Static Route records.

The following tables lists the display and configuration attribute names available for Static Route.

Name	Shortcut	Mode	Description
config	cfg	disp	Displays Static Route configuration
destination	dest	cfg	Sets Destination host or network
subnet-mask	mask	cfg	Sets Subnet Mask
gateway	gate	cfg	Sets Default Gateway
metric	cost	cfg	Sets Routing Metric value
interface	intf	cfg	Sets Interface Name, eg: SCP10

```
CLI> help sr config
```

FORE Systems ESX-CLI Static Routes Help

Syntax:

```
CLI> show static-route cfg <attribute>
CLI> sh sr cfg <attribute>
```

Description:

Display the Static Route subsystem configuration information, including destination, network mask, gateway metric, interface, and adapter name.

Example(s):

```
CLI> show static-route cfg
CLI> sh sr cfg gate
```

```
CLI> help sr dest
```

FORE Systems ESX-CLI Static Routes Help

Syntax:

```
CLI> cfg static-route <attribute> <value> port <name>
```

Description:

Configure the static route in specific interface.

Example(s):

```
CLI> add static-route destination 1.2.3.0/24 gateway 10.60.5.6 metric 22 port 1a5
CLI> add sr dest 1.2.3.0/24 gateway 10.60.5.6 cost 22 port 1a5
CLI> cfg sr dest 1.2.3.0/24 gateway 10.60.5.6 cost 22 port 1a5
CLI> cfg sr dest 1.2.3.0 mask 255.255.255.0 gateway 10.60.5.6 cost 22 port 1a5
```

```
CLI> del sr dest 1.2.3.0/24 gateway 10.60.5.6 cost 22 port la5
CLI> add sr dest 1.2.3.0/24 gateway 10.60.5.6 cost 22 intf scp10 port la5
```

```
CLI> help sr mask
CLI> help sr gate
CLI> help sr cost
CLI> help sr intf
```

FORE Systems ESX-CLI Static Routes Help

Syntax:

```
CLI> cfg static-route <attribute> <value> port <name>
```

Description:

Configure the static route in specific interface.

Example(s):

```
CLI> add static-route destination 1.2.3.0/24 gateway 10.60.5.6 metric 22 port la5
CLI> add sr dest 1.2.3.0/24 gateway 10.60.5.6 cost 22 port la5
CLI> cfg sr dest 1.2.3.0/24 gateway 10.60.5.6 cost 22 port la5
CLI> cfg sr dest 1.2.3.0 mask 255.255.255.0 gateway 10.60.5.6 cost 22 port la5
CLI> del sr dest 1.2.3.0/24 gateway 10.60.5.6 cost 22 port la5
CLI> add sr dest 1.2.3.0/24 gateway 10.60.5.6 cost 22 intf scp10 port la5
```

3.25 Transparent Bridge

See 3.5 Bridge

3.26 Trunk

FORE Systems ESX-CLI Trunk Group Help

Syntax:

```
CLI> cfg trunk group <number> port <number>
CLI> add trunk group <number> port <number>
CLI> del trunk group <number|*|all> [port <number>]
CLI> sh trunk cfg group <number|*|all>
CLI> sh trunk cfg
```

Description:

The trunk group (or multi-link) subsystem provides configuration access to the FORE Systems trunk group software. The user can configure trunking functionality on a port or series of ports, and can group these ports into single or multiple trunk groups.

FORE Systems, ESX-CLI attributes for subsystem (Trunk Group)

Verbose Keyword	Shortcut	Context	Description
configuration	cfg	help	Display Trunk Group Information
add	add	help	Add Command Help
show	sh	help	Show Command Help
delete	del	help	Delete Command Help

4 Configuration

You can use ESX-Cli to perform configuration operations in either of two modes, as follows:

- In atomic mode, ESX-Cli performs a series of configuration steps as a single operation.

Use the Begin and End command primitives to enclose a series of configuration steps as an atomic operation. While the series is being processed, the client (ESX-Cli) owns the lock rights of the switch, and no other client may perform configuration operations without purposely stealing the lock key.

- In non-atomic mode, ESX-Cli executes configuration operations singly, and the operations do not have dependencies on subsequent operations.

A single configuration command is implicitly atomic if the user does not explicitly use the begin and end primitives. For example:

Explicit Atomic Operation:

	Description of Operation
CLI> begin	acquires lock key
CLI> cfg ip port 1a1 addr 1.1.1.1/24	stores command in bsc
CLI> cfg ip port 1a2 addr 2.2.2.2/24	store
CLI> cfg lb group 2 port 1a2	store
CLI> end	execute(s) 3 cfg's, release lock

Implicit Atomic Operation:

CLI> cfg ip port 1a1 addr 1.1.1.1/24	acquire, . execute, release
CLI> cfg ip port 1a2 addr 2.2.2.2/24	
CLI> cfg lb group 2 port 1a2	

Explicit commands are first sent to BSC waits until the “end” command is executed. Only then will each of the three “cfg” commands be executed. The implicit operation example will execute each “cfg” command individually, acquiring the lock key as needed for each command.

The remainder of this section lists the configuration attributes for each subsystem and the acceptable values for each attribute. To set an attribute value for an object, you enter a Configure command that contains the attribute name (or its associated shortcut) and a value.

4.1 Application-filter

Syntax:

```
CLI> cfg policy name "aaa" policy-port all policy-type specific-default policy-mode enabled
policy-action forward target-port 1a1 application-filter "abc"
```

Attribute	Shortcut	Values
name	nam	Application Name
port-type	type	Port type: static or dynamic
protocol-type	proto	Protocol Type: tcp, udp, both
server-port	server	Server Ports: up to 5 ranges
client-port	client	Client Ports: up to 5 ranges
server-name	sname	Server name or address: 10 max

4.2 ARP

Syntax:

```
CLI> cfg arp port 1a1 mac-address xx:xx:xx:xx:xx:xx addr w.x.y.z qos
berkeley|network|high|best> type <static|dynamic>
```

Attribute	Shortcut	Values
Mac-address	mac	48bit xx:xx:xx:xx:xx:xx
type	type	Static, dynamic
qos	qos	Berkeley Network High best

4.3 ADSA

Syntax:

```
CLI> cfg arp port 1a1 mac-address xx:xx:xx:xx:xx:xx addr w.x.y.z qos
<berkeley|network|high|best> type <static|dynamic>
```

Attribute	Shortcut	Values
directory-server	dss	Configure DS Server for ADSA
port-no	dport	Configure Directory Port Number
user-dn	user	Directory User Name
password	pwd	Directory User Password
switch-prefix-dn	swc	Switch Container Prefix in the directory
pause-minutes	pause	Pause Time in Minutes
switch-dn	swdn	Switch DN in the directory
crypt-password	xpwd	Encrypted Directory User Password

4.4 Bridge

Syntax:

```
CLI> cfg bridge Group 1 Name "Bridge 1" Bridge-ID 00:e0:78:00:00:01 Ports 2 Type
Transparent
CLI> cfg lb port 1a6 group 1
CLI> cfg lb port 1a7 group 1
```

Attribute	Shortcut	Values
name	name	Quoted text string, 48 chars
bridge-id	bid	48-bit xx:xx:xx:xx:xx:xx
num-ports	ports	Decimal number 1 to 'n'
type	type	transparent

4.5 BSC

Syntax:

```
CLI> ena bsc debug
CLI> cfg bsc mgt-all slot 1
CLI> cfg bsc mgt-rm slot 1 port 1a4
CLI> cfg bsc mgt-none slot 2
CLI> cfg bsc mgt-add slot 3 port 1a8
CLI> cfg bsc mgt-only slot 4 port 1a24
```

Static Route Attributes	Shortcut	Values
debug	dbg	Enable or Disable debug port
mgt-all	mgt-all	Configure all ports
mgt-none	mgt-none	No ports configured for mgt
mgt-only	mgt-only	Only this port for mgt
mgt-rm	mgt-rm	Remove this port for mgt.
mgt-add	mgt-add	Add this port for mgt.

4.6 Card

Syntax:

```
CLI> cfg lc slot 1 id 48TX
CLI> cfg lc slot 2 id 24TX3SX
```

Attribute	Shortcut	Values
Card-id	id	48TX 24TX3SX 24TX 6SX

4.7 Chassis

Syntax:

```
CLI> cfg chassis model e8 uid 0x1234 desc "e8 Chassis" contact "Engineering x3040"  
CLI> cfg chassis name "e8 Pulsar" location "Building 8"
```

Attribute	Shortcut	Values
Model-number	Model	e8 e4 e Micro
Unique-id	Uid	Hex number 32-bit
Description	Descr	Quoted String, 255 chars or less
Contact	Cont	Quoted String, 255 chars or less
Name	Name	Quoted String, 255 chars or less
Location	Loc	Quoted String, 255 chars or less

4.8 DHCP-Relay

Attribute	Shortcut	Values
log-level	Log	Event logging level
servers	svr	List of DHCP servers
relay-mode	relay	DHCP Relay Mode: enable/disable
max-hops	hops	Maximum hops 1-16, default [4]
max-secs	secs	Timeout secs 0-32767 default [0]

4.9 Ethernet

Syntax:

```
CLI> cfg enet port 1a1  
CLI> cfg enet port 1a2 state disabled speed 10mb duplex half
```

Attribute	Shortcut	Values
State	State	Enable Disable
Speed	speed	10Mb 100Mb 1Gb
Duplex	duplex	Half, full, auto

4.10 IP

Syntax:

```
CLI> cfg ip Address 10.60.6.6/24 Mode Enabled Port 1a6
CLI> cfg ip Address 10.4.2.8/16 Broadcast 0.0.0.0 Gateway 10.4.0.1 DHCP-Mode Enabled
Adapter 2
CLI> cfg ip Address 192.168.0.1/24 Broadcast 0.0.0.0 Gateway 0.0.0.0 DHCP-Mode Disabled
Adapter 3
```

Attribute	Shortcut	Values
address	addr	Dotted notation w.x.y.z or CIDR format as w.x.y.z/#bits
mask	mask	Dotted notation a..b.c.d
gateway	gate	Dotted notation w.x.y.z (optional, used for adapter 2)
Dhcp-mode	dhcp	Controls whether DHCP address assignment is used. Valid only on adapter 2 interface in first release. Values are: enabled, disabled
mode	mode	Controls whether or not routing is enabled or disabled on this port. Values are: enabled, disabled
broadcast	bcast	Dotted notation w.x.y.z (optional field, not used in first release)

4.11 Line Cards

See 4.6 Card

4.12 Line Card Processor (LCP)

Syntax: CLI>cfg lcp slot 1 baud 57600
eCLI_lcp_1>cfg lcp baud 57600

Attribute	Shortcut	Values
Baud-rate	baud	300 1200 2400 4800 9600 19200 38400 57600 115200

4.13 NSC

Syntax:

```
CLI> set trace-mode console
CLI> enable nsc tracing SCCM IPL MIBII
```

NSC Tracing Attributes	Shortcut	Values
trace-mode	trace-mode	Console File Both Note: Must use "set" primitive
tracing	trace	Subsystem Name for tracing BOOTP IPRIP IPRIPMIB IPMGR IPL MIBII OSPF OSPFMIB Router SCCM

Syntax:

```
CLI> add|delete|config|show nsc accounts
CLI> cfg nsc acc <username> [user-group <group-name>]
```

Account Attributes	Shortcut	Values
user-group	usr-grp	Type of account being created: None Admins Administrators Guests Users

Syntax:

```
CLI> cfg nsc password <username>
```

Note: User is prompted for information. No command line configurable parameters.

4.14 OSPF

Syntax:

```
CLI> cfg ospf global router-id 10.60.0.1 asbr Disabled log-level Warning
```

Global Attributes	Shortcut	Values
log-level	log	None, no events are logged Error, only errors are logged. This is default if not specified. Warning, log errors and warnings All, log all events.
router-id	id	Unique Router ID in dotted notation.
ASBdrRouter	asbr	ASBR Mode. Values: Enabled Disabled

Note: ASBR can also be enabled or disabled using the “enable” and “disable” primitives.

Example syntax is:

```
CLI> enable ospf global asbr
```

```
CLI> disable ospf global asbr
```

Syntax:

```
CLI> cfg ospf area area-id 10.10.10.10 auth-type Simple stub No metric 0 import No
```

Area Attributes	Shortcut	Values
area-id	id	OSPF Area ID in dotted notation.
auth-type	auth	Simple None
stub-area	stub	Yes No
stub-metric	metric	Stub Area Metric from 1 to 'n'
import-adv	import	Import Summary advertisements. Values: Yes No

Syntax:

```
CLI> cfg ospf interface port 1a5 address 10.60.5.6 mask 255.255.255.0 area-id 10.10.10.10 type  
Broadcast priority 1 tdly 14 retrans-int 20 hello-int 30 dead-int 40 poll-int 50 cost 2 password  
12345678 mtu 1500
```

Interface Attributes	Shortcut	Values
area-id	id	Area ID in dotted notation
type	type	Interface type Broadcast NBMA Point-To-Point
priority	pri	Priority metric from 1 to 'n'
transit-delay	tdly	Transit Delay from 1 to 'n'
retrans-int	retr	Retransmit Interval from 1 to 'n'
hello-int	hello	Hello Interval from 1 to 'n'

dead-int	dead	Dead Time interval from 1 to 'n'
poll-int	poll	Polling interval from 1 to 'n'
metric-cost	cost	Interface metric from 1 to 'n'
password	pwd	Interface password, ascii string of up to 8 characters, no spaces
mtu-size	mtu	OSPF MTU size from 60 to 1500

Syntax:

```
CLI> cfg ospf area-range area-id 10.10.10.10 range-net 10.60.0.0 range-mask 255.255.0.0
```

Area Range Attributes	Shortcut	Values
area-id	id	Area ID in dotted notation
range-net	net	Area Network in dotted notation
range-mask	mask	Area Network Mask in dotted notation.

Syntax:

```
CLI> cfg ospf neighbor port 1a5 nbr-address 10.60.5.99 address 10.60.5.6 priority 21
```

Neighbor Attributes	Shortcut	Values
nbr-address	naddr	Neighbor Address in dotted notation
address	addr	IP Address of interface in dotted notation
priority	pri	Neighbor priority from 1 to 'n'

Syntax:

```
CLI> cfg ospf virtual transit-area-id 20.20.20.20 nbr-rtr-id 10.60.2.60 transit-delay 99 retrans-int 55 hello-int 30 dead-int 20 password 12345678
```

Virtual Interface Attributes	Shortcut	Values
transit-area-id	tid	Transit ID in dotted notation
nbr-rtr-id	nid	Neighbor ID in dotted notation
retrans-int	retr	Retransmit interval from 1 to 'n'
hello-int	hello	Hello Interval from 1 to 'n'
dead-int	dead	Dead time interval from 1 to 'n'
password	pwd	Ascii string up to 8 characters, no spaces

Syntax:

```
CLI> cfg ospf route-filter address 10.60.2.6 port 1a6 raddr 122.1.0.1 rmask 255.255.255.0 action drop
```

Route Filter Attributes	Shortcut	Values
route-address	raddr	Route Address in dotted notation
route-mask	rmask	Route Mask in dotted notation
action	act	Disabled Drop Only

Syntax:

```
CLI> cfg ospf protocol-filter action only id rip
```

Protocol Filter Attributes	Shortcut	Values
action	act	Disabled Drop Only
protocol-id	id	RIP SNMP Static

4.15 Policy

Syntax:

```
CLI> cfg policy name "aaa" policy-port all policy-type specific-default policy-mode enabled
policy-action forward target-port 1a1 application-filter "abc"
```

```
CLI> cfg policy name "ccc"
```

Attribute	Shortcut	Values
name	nam	Application Policy Name
policy-port	pport	Ports Applied This Policy
policy-type	type	Policy Type: security, etc
policy-mode	mode	Policy Mode: enabled, Disabled, etc
policy-action	act	Policy Action: Default, Drop, etc
target-port	tport	Policy Destion Port or IP addresses
application-filter	filter	Application Filter Name

4.16 Port-Map

Syntax:

```
CLI> cfg port-map port 1 type Physicalmlink 0 group 0 slot 1 mod 1 con 1 vc 0 ifIndex 1
```

Attribute	Shortcut	Values
Port	port	
Type	type	Physical L1Group L2Group

Mlink	mink	L1 Group Number 1 to 1024
Group	group	L2 Group Number 1 to 1024
Slot	slot	1 to 8
Module	mod	1, 2, 3, 4
Connector	con	1 to 24
Vc	vc	n/a in first release
ifIndex	ifIndex	Offset to Berkeley Virtual adapter. Note: does not directly map to MIB-II ifIndex in first release.

Note: The port-map table is automatically generated. While it is saved in the configuration file, the user should not modify entries in the table or unexpected results may occur. The port-map table will be generated from a configuration file if it is not present within the file.

4.17 RIP

Syntax:

```
CLI> cfg rip global log-level error update 5
```

Global Attributes	Shortcut	Values
log-level	log	None, no events are logged Error, only errors are logged. This is default if not specified. Warning, log errors and warnings All, log all events.
update	int	Update mode: Periodic, Demand
mode	mode	Peer Mode: Disable, Accept, Drop
peers	peer	A list of peer nodes listed in dotted notation: example: peer w.z.y.z a.b.c.d 1.2.3.4

Syntax:

```
CLI> cfg rip interface port 1a5 cost 1 update periodic accept RIP1 announce RIP1 expire 180
remove 120 periodic 30 auth disabled tag 0 peer-filter disabled accept-filter include announce-
filter disable
```

Interface Attributes	Shortcut	Values
cost	cost	Interface metric cost Valid decimal number 1 to 15
update-mode	update	Periodic Demand
accept-mode	accept	Disabled RIP1 RIP1C

		RIP2
announce-mode	announce	Disabled RIP1 RIP1C RIP2
authentication	auth	disabled simple MD5
password	pwd	String text, no spaces, up to 15 characters in length.
periodic	per	Periodic Interval, 1 to 'n'
expire	exp	Expiration interval, 1 to 'n'
remove	rem	Route Removal interval, 1 to 'n'
route-tag	tag	Route Tag decimal from 1 to 'n'
peer-filter	peer	Unicast Peer Filter Mode Disabled Unicast Peer Disabled Also Process route also Only Process routes only
accept-filter	accflt	Accept Filter Mode Disabled Accept Filter Disabled Include Accept from list Exclude Reject from list
announce-filter	annflt	Announce Filter Mode Disabled Filter Disabled Include Accept from list Exclude Reject from list

Syntax:

CLI> add rip announce-filter mode include filter from 1.1.1.0 to 2.1.1.0 port 1a5

Announce Filter Attributes	Shortcut	Values
mode	mode	Disabled Include Exclude
filter-range	filter	Enter filter range in dotted notation in the form: from a.b.c.d to w.x.y.z

Syntax:

CLI> add rip accept-filter mode include filter from 132.4.5.6 to 133.1.1.1 port 1a5

Accept Filter Attributes	Shortcut	Values
mode	mode	Disabled Include Exclude
filter-range	filter	Enter filter range in dotted notation in the form: from a.b.c.d to w.x.y.z

Syntax:

```
CLI> add rip unicast-peer mode only filter 101.1.1.1 port 1a2
```

Unicast-Peer Attributes	Shortcut	Values
mode	mode	Disabled Only Also
filter	filter	Unicast Peer in dotted notation

Syntax:

```
CLI> cfg rip protocol split poison cl tu port 1a5
```

Protocol Attributes	Shortcut	Values
split-horizon	split	Enable Split Horizon Mode
poison-reverse	poison	Enable Poison Reverse Mode
triggered-updates	tu	Enable triggered updates
clean-up	cl	Clean up updates when stopping
override	or	Override NON-RIP routes
rx-host-routes	rxh	Process host routes received
tx-host-routes	txh	Include host routes in pkts sent
rx-default-routes	rxh	Process defaults routes received.
tx-default-routes	txd	Include default routes in pkts sent.

Note: Protocol options are enabled by listing them on the configuration line. If they are not listed then by default they are disabled.

Syntax:

```
CLI> cfg rip timers periodic 30 expire 180 remove 120 port 1a5
```

Timers Attributes	Shortcut	Values
periodic	per	Periodic Announcement timer values from 1 to 'n'
expire	exp	Route expiration timer values from 1 to 'n'
remove	rem	Route removal timer values from 1 to 'n'

4.18 Spanning-Tree

Syntax:

```
CLI> cfg spanning-tree Group 1 Priority 32768 Max-Age 20 Hello-Time 2 Fwd-Delay 15  
CLI> cfg spanning-tree Port 1a6 Port-Priority 128 State Enabled Cost 10
```

```
CLI> cfg spanning-tree Port 1a7 Port-Priority 128 State Enabled Cost 10
```

Attribute	Shortcut	Values
priority	Pri	Global priority, decimal number between 0 and 65535
max-age	Age	Global max age, decimal number between 6 and 40
hello-time	hello	Global hello-time, decimal between 1 and 10
fwd-delay	dly	Port forwarding delay, decimal between 4 and 30
port-priority	ppri	Port priority, decimal between 0 and 255
state	state	Enabled, disabled
path-cost	cost	Port path cost, decimal between 1 and 100

4.19 Static Routes

Syntax:

```
CLI> cfg Static-Route Destination 1.2.3.0/24 Gateway 10.60.5.6 Metric 22 port 1a5
```

Static Route Attributes	Shortcut	Values
destination	dest	Destination address in dotted notation. May be in CIDR format.
Gateway	gate	Gateway address in dotted notation
Metric	cost	Metric value from 1 to 'n'

4.20 Transparent Bridge

See 4.4 Bridge.

4.21 Trunk

Syntax: CLI> cfg trunk group <number> port <number>

Static Route Attributes	Shortcut	Values
configure	dfg	Display trunk group information.

5 Statistics Displays

This section lists each of the available statistics and monitoring displays via ESX-Cli. Three primitives display statistical or informational displays, show, display and monitor. Display and Show primitives are equivalent while the monitor primitive performs a repeat operation until user intervenes with Control-C. The environment variable REFRESH effects the display rate of a monitor command.

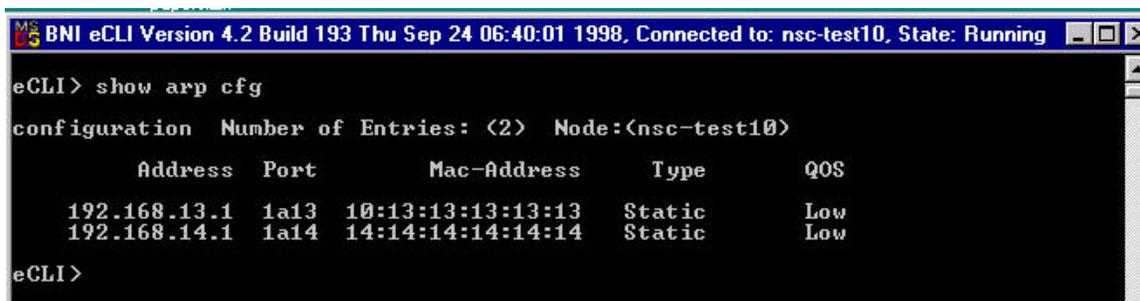
The properties of ESX-Cli's shell window can be set using the properties tab (right click in the header bar). Since many of the displays contain multiple columns of data, the following attributes are suggested:

- Width 180 characters
- Lines 50
- Font Size 10 or 12

There are two modes during display, Row and Table. When displaying statistics for a single port, the data normally displayed in a table is displayed line by line in rows. When displaying multiple ports, groups or addresses, the display will be in a tabular format.

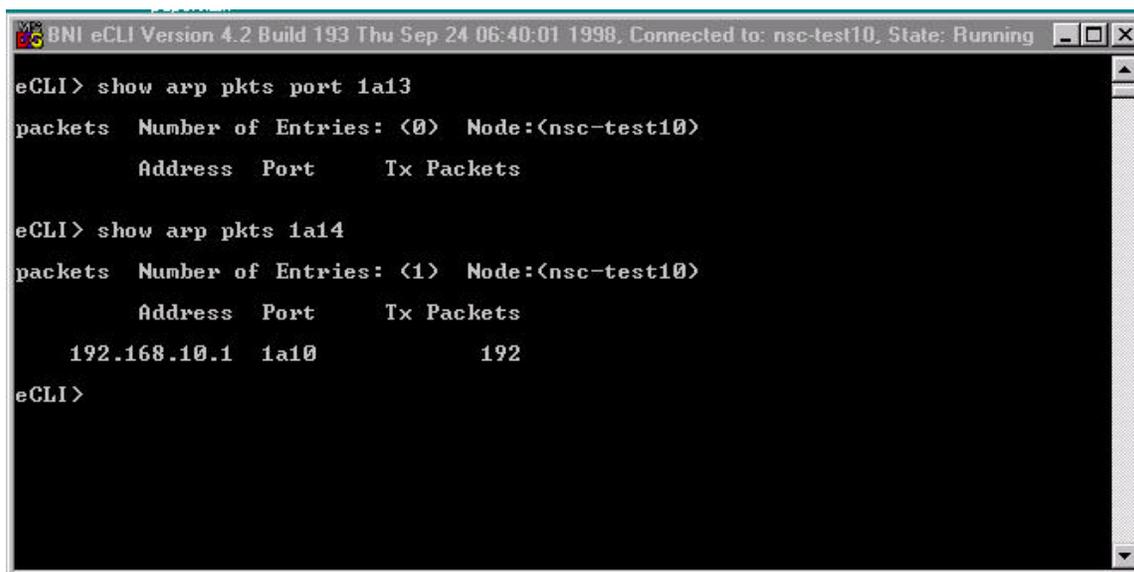
5.1 ARP

Figure 1 – ARP Configuration



```
MS-DOS BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show arp cfg
configuration Number of Entries: <2> Node:<nsc-test10>
      Address  Port      Mac-Address      Type      QoS
192.168.13.1  1a13  10:13:13:13:13:13  Static   Low
192.168.14.1  1a14  14:14:14:14:14:14  Static   Low
eCLI>
```

Figure 2 – ARP Packets



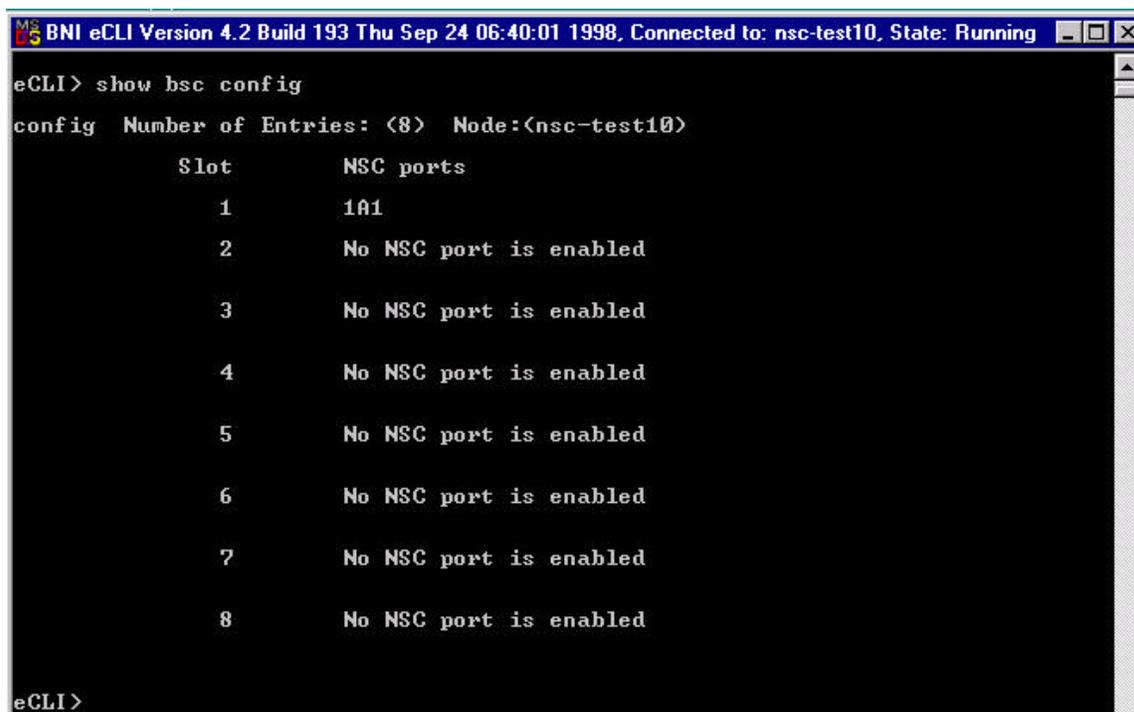
```
BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show arp pkts port 1a13
packets  Number of Entries: <0>  Node:<nsc-test10>
           Address  Port      Tx Packets

eCLI> show arp pkts 1a14
packets  Number of Entries: <1>  Node:<nsc-test10>
           Address  Port      Tx Packets
           192.168.10.1  1a10      192

eCLI>
```

5.2 BSC

Figure 3 – BSC Configuration



```
BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show bsc config
config  Number of Entries: <8>  Node:<nsc-test10>
           Slot      NSC ports
           1         1A1
           2         No NSC port is enabled
           3         No NSC port is enabled
           4         No NSC port is enabled
           5         No NSC port is enabled
           6         No NSC port is enabled
           7         No NSC port is enabled
           8         No NSC port is enabled

eCLI>
```

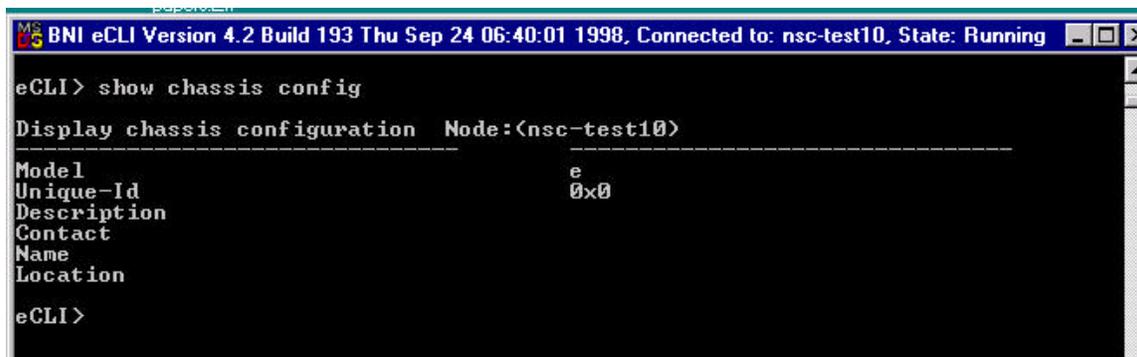
Figure 4 – BSC Information

```
MS BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show bsc info
config  Number of Entries: <8>  Node:<nsc-test10>
      Slot      NSC ports
      1         1A1
      2         No NSC port is enabled
      3         No NSC port is enabled
      4         No NSC port is enabled
      5         No NSC port is enabled
      6         No NSC port is enabled
      7         No NSC port is enabled
      8         No NSC port is enabled

statistics  Node:<nsc-test10>
-----
Slot              1
Status            Normal
Revision          4.2.4
Card Reset Count  0
UCP Pkts Received 912,383
UCP Pkts Transmitted 913,574
UCP Error Pkts Received 0
eCLI> ■
```

5.3 Chassis

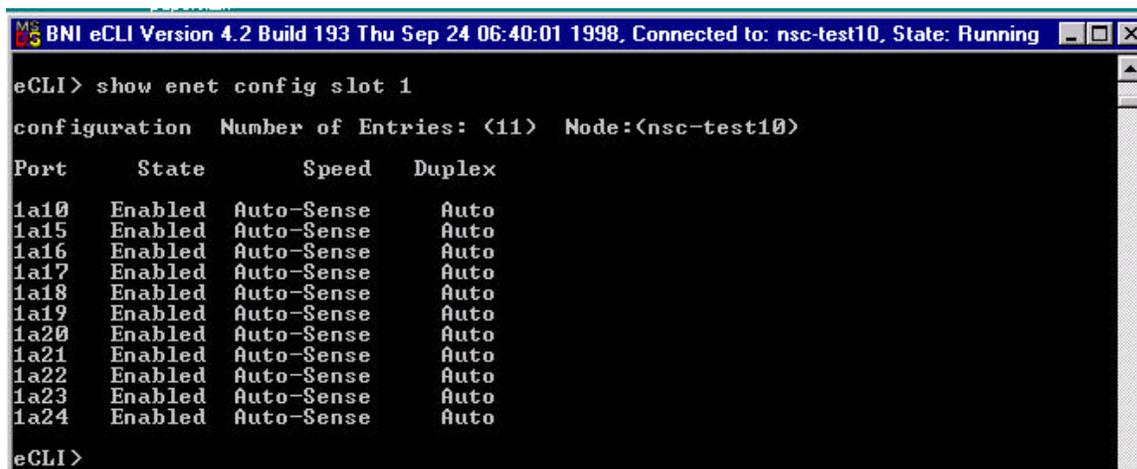
Figure 5 – Chassis Configuration and Status



```
BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show chassis config
Display chassis configuration Node:(nsc-test10)
-----
Model                               e
Unique-Id                            0x0
Description
Contact
Name
Location
eCLI>
```

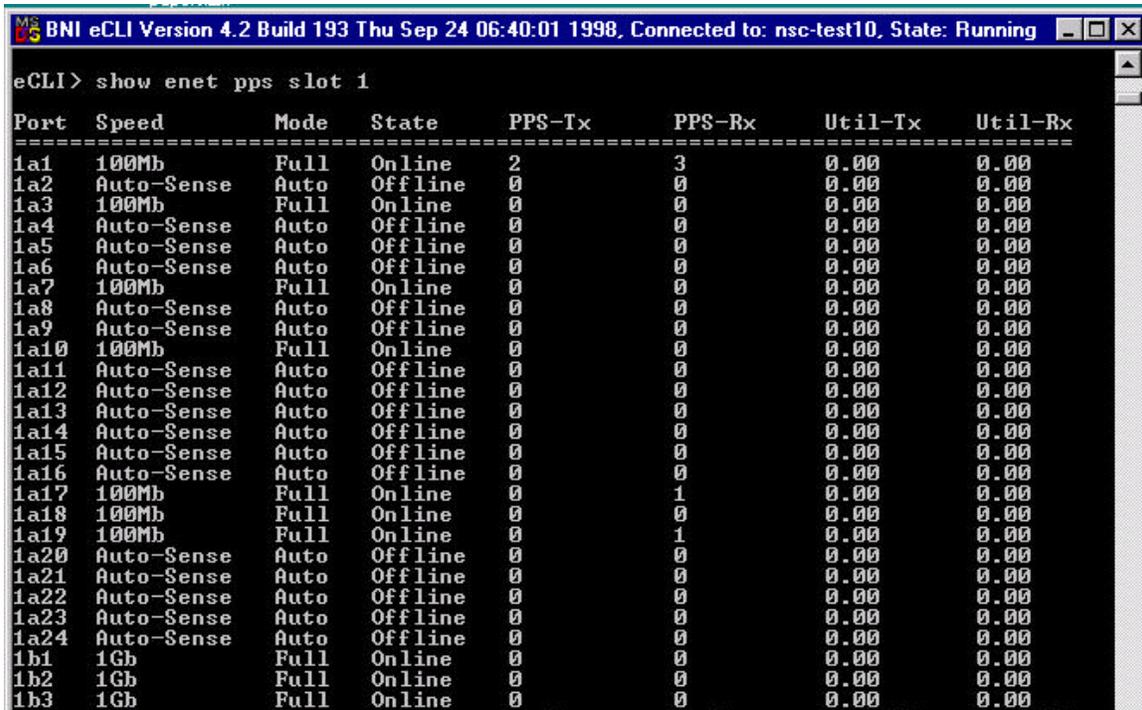
5.4 Ethernet

Figure 6 – Ethernet Configuration



```
BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show enet config slot 1
configuration Number of Entries: <11> Node:(nsc-test10)
Port      State      Speed      Duplex
1a10      Enabled    Auto-Sense  Auto
1a15      Enabled    Auto-Sense  Auto
1a16      Enabled    Auto-Sense  Auto
1a17      Enabled    Auto-Sense  Auto
1a18      Enabled    Auto-Sense  Auto
1a19      Enabled    Auto-Sense  Auto
1a20      Enabled    Auto-Sense  Auto
1a21      Enabled    Auto-Sense  Auto
1a22      Enabled    Auto-Sense  Auto
1a23      Enabled    Auto-Sense  Auto
1a24      Enabled    Auto-Sense  Auto
eCLI>
```

Figure 7 – Ethernet Packets

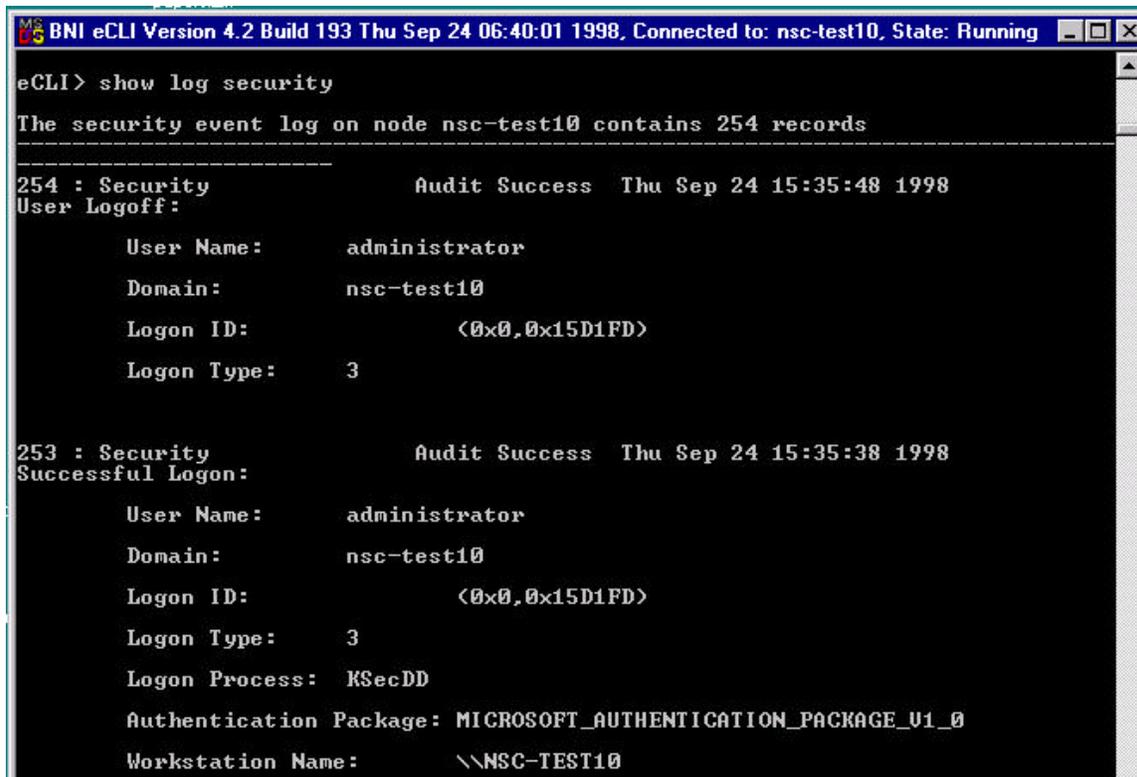


The screenshot shows a terminal window titled "BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running". The user has entered the command "eCLI> show enet pps slot 1". The output is a table with 8 columns: Port, Speed, Mode, State, PPS-Tx, PPS-Rx, Util-Tx, and Util-Rx. The table lists 27 ports (1a1-1a24 and 1b1-1b3) with their respective configurations and statistics.

Port	Speed	Mode	State	PPS-Tx	PPS-Rx	Util-Tx	Util-Rx
1a1	100Mb	Full	Online	2	3	0.00	0.00
1a2	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a3	100Mb	Full	Online	0	0	0.00	0.00
1a4	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a5	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a6	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a7	100Mb	Full	Online	0	0	0.00	0.00
1a8	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a9	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a10	100Mb	Full	Online	0	0	0.00	0.00
1a11	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a12	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a13	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a14	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a15	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a16	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a17	100Mb	Full	Online	0	1	0.00	0.00
1a18	100Mb	Full	Online	0	0	0.00	0.00
1a19	100Mb	Full	Online	0	1	0.00	0.00
1a20	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a21	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a22	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a23	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1a24	Auto-Sense	Auto	Offline	0	0	0.00	0.00
1b1	1Gb	Full	Online	0	0	0.00	0.00
1b2	1Gb	Full	Online	0	0	0.00	0.00
1b3	1Gb	Full	Online	0	0	0.00	0.00

5.5 Event Log

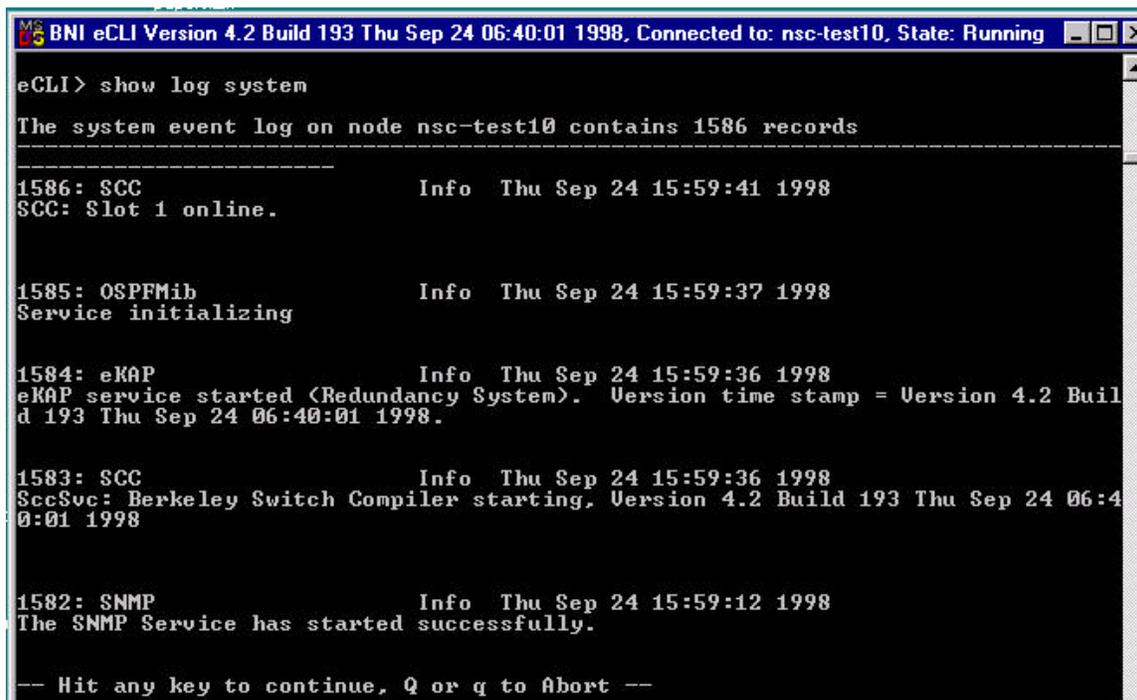
Figure 8 – Event Log: Security



```
MSI BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show log security
The security event log on node nsc-test10 contains 254 records
-----
254 : Security                               Audit Success  Thu Sep 24 15:35:48 1998
User Logoff:
    User Name:      administrator
    Domain:         nsc-test10
    Logon ID:       <0x0,0x15D1FD>
    Logon Type:     3

253 : Security                               Audit Success  Thu Sep 24 15:35:38 1998
Successful Logon:
    User Name:      administrator
    Domain:         nsc-test10
    Logon ID:       <0x0,0x15D1FD>
    Logon Type:     3
    Logon Process:  KSecDD
    Authentication Package: MICROSOFT_AUTHENTICATION_PACKAGE_U1_0
    Workstation Name:  \\NSC-TEST10
```

Figure 9 – Event Log: System



```
MS BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show log system
The system event log on node nsc-test10 contains 1586 records
-----
1586: SCC                               Info  Thu Sep 24 15:59:41 1998
SCC: Slot 1 online.

1585: OSPFmib                           Info  Thu Sep 24 15:59:37 1998
Service initializing

1584: eKAP                               Info  Thu Sep 24 15:59:36 1998
eKAP service started (Redundancy System).  Version time stamp = Version 4.2 Build 193 Thu Sep 24 06:40:01 1998.

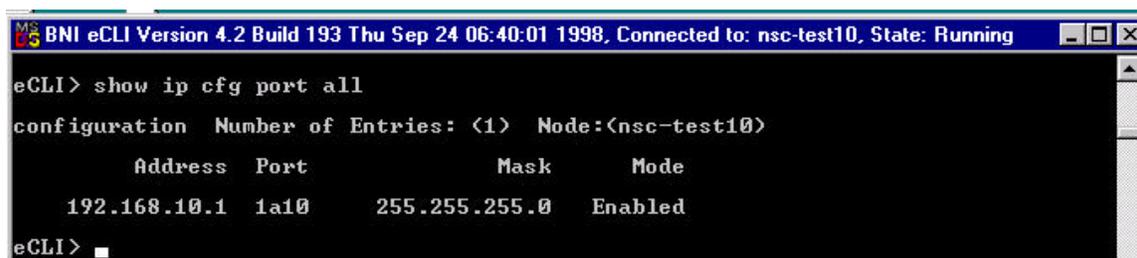
1583: SCC                               Info  Thu Sep 24 15:59:36 1998
SccSvc: Berkeley Switch Compiler starting, Version 4.2 Build 193 Thu Sep 24 06:40:01 1998

1582: SNMP                               Info  Thu Sep 24 15:59:12 1998
The SNMP Service has started successfully.

-- Hit any key to continue, Q or q to Abort --
```

5.6 IP

Figure 10 – IP Configuration



```
MS BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show ip cfg port all
configuration  Number of Entries: <1>  Node:<nsc-test10>
      Address  Port           Mask           Mode
      192.168.10.1  1a10       255.255.255.0  Enabled
eCLI> █
```

Figure 11 - IP Forwarding Table

```

MS BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show ip fwd-table
forwarding-table  Number of Entries: <10>  Node:<nsc-test10>
  Protocol  Address  Age  Mask  Next Hop  AS  Next Hop  Port  IfIndex  Route Type
  Protocol  Address  Age  Next Hop  AS  Metric
Local      0.0.0.0  1,801  0.0.0.0  0  127.0.0.1  nsc  0  Drop
Other      0.0.0.0  1,802  255.0.0.0  0  127.0.0.1  nsc  0  Drop
Other      127.0.0.0  1,802  255.0.0.0  0  Not used
Other      192.168.0.0  1,802  255.255.255.0  0  127.0.0.1  nsc  0  Drop
Local      192.168.1.0  1,801  255.255.255.0  0  127.0.0.1  nsc  0  Direct
Local      192.168.10.0  1,801  255.255.255.0  0  192.168.10.1  1a10  186  Direct
Local      224.0.0.0  1,787  240.0.0.0  0  127.0.0.1  nsc  0  Drop
Other      224.0.0.0  1,802  255.255.255.0  0  Not used
Other      240.0.0.0  1,802  240.0.0.0  0  127.0.0.1  nsc  0  Other
Other      255.255.255.255  1,802  255.255.255.255  0  Not used
Other      255.255.255.255  1,802  255.255.255.255  0  127.0.0.1  nsc  0  Drop
Other      255.255.255.255  1,802  255.255.255.255  0  Not used
Other      255.255.255.255  1,802  255.255.255.255  0  127.0.0.1  nsc  0  Other
Other      255.255.255.255  1,802  255.255.255.255  0  Not used
eCLI>

```

5.7 Line Card

Figure 12 – Line Card Configuration and Status

```

MS BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show card config slot all
Current Line Card configuration  Number of Entries: <8>  Node:<nsc-test10>
Slot  Card-Id
  1   24TX3SX
  2   48TX
  3   48TX
  4   48TX
  5   24TX3SX
  6   24TX3SX
  7   48TX
  8   48TX
eCLI>

```

5.8 MIBII

Figure 13 – MIBII ARP Table

```

BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show mibII arp-table
arp-table Number of Entries: <1> Node:<nsc-test10>
      Address  Port  IfIndex  Mac-Address
      192.168.10.1  1a10    186  00:e0:78:01:1b:8e
eCLI>

```

Figure 14 – MIBII Forwarding Table

```

BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show mibII fwd-table
forwarding-table Number of Entries: <14> Node:<nsc-test10>
      Destination  Mask  NextHop  IfIndex  Type  Proto  Age  Metric
      0.0.0.0        0.0.0.0  192.168.0.254  17  Indirect  Local  3.093  1
      127.0.0.0      255.0.0.0  127.0.0.1      2  Other    Local  3.093  1
      192.168.0.0    255.255.255.0  192.168.0.23  17  Direct   Local  3.093  1
      192.168.0.23  255.255.255.255  127.0.0.1      2  Direct   Local  3.093  1
      192.168.1.0    255.255.255.0  192.168.1.1    81  Direct   Local  3.093  3
      192.168.1.1    255.255.255.255  127.0.0.1      2  Direct   Local  3.093  1
      192.168.10.0   255.255.255.0  192.168.10.1   186  Direct   Local  3.072  1
      192.168.10.1   255.255.255.255  127.0.0.1      2  Direct   Local  3.072  1
      224.0.0.0       224.0.0.0  192.168.0.23  17  Other    Local  3.093  1
      224.0.0.0       224.0.0.0  192.168.1.1    81  Other    Local  3.093  1
      224.0.0.0       224.0.0.0  192.168.10.1   186  Other    Local  3.072  1
      255.255.255.255  255.255.255.255  192.168.0.23  17  Other    Local  3.093  1
      255.255.255.255  255.255.255.255  192.168.1.1    81  Other    Local  3.093  1
      255.255.255.255  255.255.255.255  192.168.10.1   186  Other    Local  3.072  1
eCLI>

```

Figure 15 – MIBII TCP Statistics

```

BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show mibII tcp-stats
tcp-statistics Node:(nsc-test10)
-----
TCP RtoAlgorithm      UANJ
TCP RtoMin            300
TCP RtoMax            240,000
TCP Max Connections   4,294,967,295
TCP Active Opens      8
TCP Passive Opens     10
TCP Attempts Failed   0
TCP Connection Resets 2
TCP Current Connections 10
TCP Segments Received 343,752
TCP Segments Transmit 343,761
TCP Segments Retransmitted 2
TCP Receive Errors    0
TCP Transmitted Resets 2
TCP Number Connections 34
eCLI>

```

5.9 Network Switch Controller (NSC)

Figure 16 – NSC Accounts

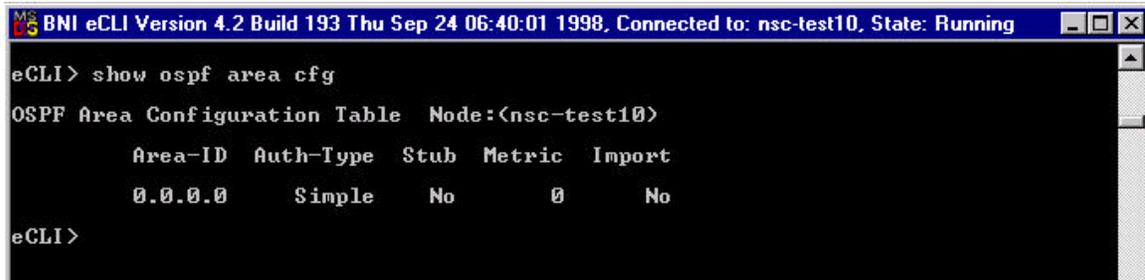
```

BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show nsc accounts
-----
User Name      #logins  #failed  Last Login                Last Logoff
-----
Administrator  493      0         Thu Sep 24 16:00:11 1998  Mon Sep 21 10:22:40 1998
Guest          0        0         Wed Dec 31 16:00:00 1969  Wed Dec 31 16:00:00 1969
eCLI> show nsc tracing
-----
Tracing Entity  Console  File
-----
bootp           Disabled Disabled
ip-rip          Disabled Disabled
ip-rip-mib      Disabled Disabled
ip-mgr          Disabled Disabled
ip-listener     Disabled Disabled
mib-II         Disabled Disabled
ip-ospf         Disabled Disabled
ospf-mib        Disabled Disabled
router          Disabled Disabled
sccm           Disabled Disabled
eCLI>

```

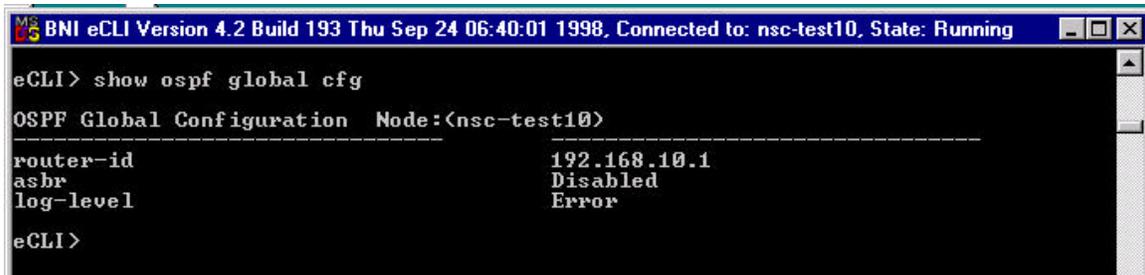
5.10 OSPF

Figure 17 – OSPF Area Configuration Table



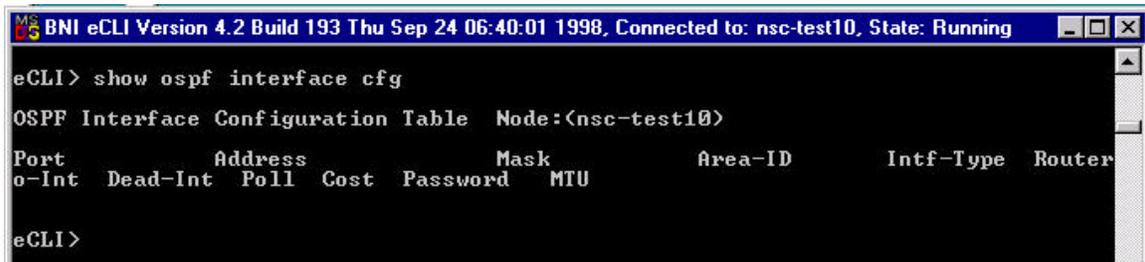
```
BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show ospf area cfg
OSPF Area Configuration Table Node:<nsc-test10>
      Area-ID Auth-Type Stub Metric Import
      0.0.0.0 Simple No 0 No
eCLI>
```

Figure 18 – OSPF Global Configuration Node



```
BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show ospf global cfg
OSPF Global Configuration Node:<nsc-test10>
-----
router-id 192.168.10.1
asbr Disabled
log-level Error
eCLI>
```

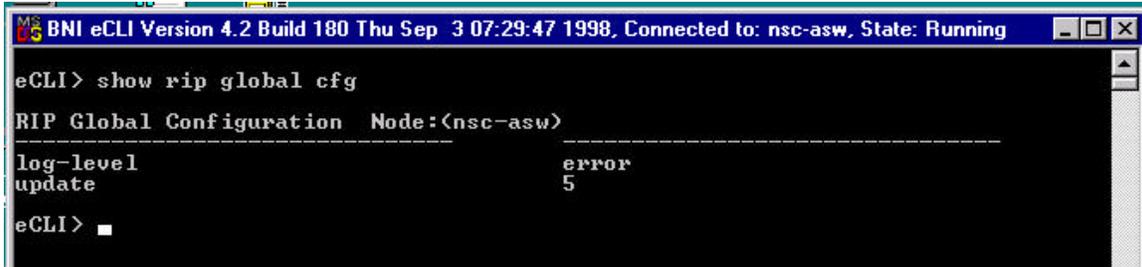
Figure 19 – OSPF Interface Configuration Table



```
BNI eCLI Version 4.2 Build 193 Thu Sep 24 06:40:01 1998, Connected to: nsc-test10, State: Running
eCLI> show ospf interface cfg
OSPF Interface Configuration Table Node:<nsc-test10>
Port Address Mask Area-ID Intf-Type Router
o-Int Dead-Int Poll Cost Password MTU
eCLI>
```

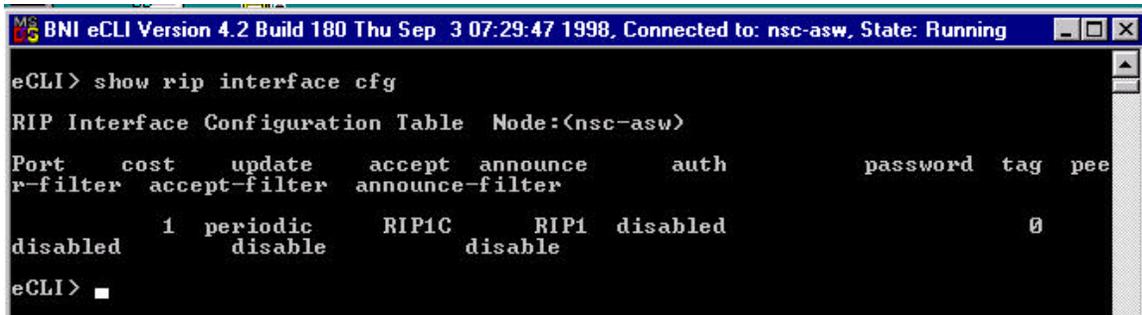
5.11 RIP

Figure 20 – RIP Global Configuration Node



```
BNI eCLI Version 4.2 Build 180 Thu Sep 3 07:29:47 1998, Connected to: nsc-asw, State: Running
eCLI> show rip global cfg
RIP Global Configuration Node:(nsc-asw)
-----
log-level          error
update            5
eCLI> █
```

Figure 21 – RIP Interface Configuration Table



```
BNI eCLI Version 4.2 Build 180 Thu Sep 3 07:29:47 1998, Connected to: nsc-asw, State: Running
eCLI> show rip interface cfg
RIP Interface Configuration Table Node:(nsc-asw)
Port      cost  update  accept  announce  auth      password  tag  pee
r-filter  accept-filter  announce-filter
disabled  1    periodic  RIP1C   RIP1     disabled  0
         disable
eCLI> █
```

Figure 22 – RIP Protocol Information

```

Berkeley Networks, inc. eCLI Utility, Build 4.0.0.1 Tue May 12 17:30:07 1998, Connected to Node: nsc-gp, State: Running
eCLI> show rip protocol info
Port   Protocol Option List
-----
1a9    rx-host-routes split-horizon poison-reverse cleanup triggered-updates
Port   Protocol Option List
-----
1a11   split-horizon poison-reverse cleanup triggered-updates
Port   Protocol Option List
-----
1a2    split-horizon poison-reverse cleanup triggered-updates
Port   Protocol Option List
-----
1a4    split-horizon poison-reverse cleanup triggered-updates
Port   Protocol Option List
-----
1a6    split-horizon poison-reverse cleanup triggered-updates
Port   Protocol Option List
-----
1a8    split-horizon poison-reverse cleanup triggered-updates
eCLI>

```

5.12 Spanning Tree

Figure 23 – Spanning Tree Configuration: Group

```

Berkeley Networks, inc. eCLI Utility, Build 4.0.0.1 Tue May 12 17:30:07 1998, Connected to Node: nsc-ursa-minor, State: Running
eCLI> show spt config group 1
config Node:(nsc-ursa-minor)
-----
Group          1
Priority        32,768
Max-Age        20
Hello-Time     2
Fwd-Delay     15
eCLI> show spt config group *
config Number of Entries: (4) Node:(nsc-ursa-minor)
Group Priority Max Age Hello Time Forward Delay
  1   32,768    20      2         15
  2   32,768    20      2         15
  3   32,768    20      2         15
  4   32,768    20      2         15
eCLI> show spt config group 2
config Node:(nsc-ursa-minor)
-----
Group          2
Priority        32,768
Max-Age        20
Hello-Time     2
Fwd-Delay     15
eCLI> _

```

Figure 24 – Spanning Tree Configuration: Ports

```

Berkeley Networks, inc. eCLI Utility, Build 4.0.0.1 Tue May 12 17:30:07 1998, Connected to Node: nsc-ursa-minor, State: Running

eCLI> show spt config group 1 port all
config Number of Entries: (14) Node:(nsc-ursa-minor)
  Port    Port-Priority    State    Cost
  1a3     128             Enabled  10
  1a4     128             Enabled  10
  1a5     128             Enabled  10
  1a6     128             Enabled  10
  1a7     128             Enabled  10
  1a8     128             Enabled  10
  2a17    128             Enabled  10
  2a18    128             Enabled  10
  2a19    128             Enabled  10
  2a20    128             Enabled  10
  2a21    128             Enabled  10
  2a22    128             Enabled  10
  2a23    128             Enabled  10
  2a24    128             Enabled  10

eCLI> show spt config port all
config Number of Entries: (73) Node:(nsc-ursa-minor)
  Port    Port-Priority    State    Cost
  1a3     128             Enabled  10
  1a4     128             Enabled  10
  1a5     128             Enabled  10
  1a6     128             Enabled  10
  1a7     128             Enabled  10
  1a8     128             Enabled  10
  1a10    128             Enabled  10

```

Figure 25 – Spanning Tree Statistics

```

Berkeley Networks, inc. eCLI Utility, Build 4.0.0.1 Tue May 12 17:30:07 1998, Connected to Node: nsc-ursa-minor, State: Running

eCLI> show spt stats
statistics Number of Entries: (5) Node:(nsc-ursa-minor)
  Port    State    Root ID    Cost    BridgeId    RootPort    Fwd Transition    Rx BPDUs    Tx BPDUs    Rx T
  1a3    Forwarding    80:00:00:e0:78:00:fa:91    0    80:00:00:e0:78:00:fa:91    22    1    0    7,424
  1a4    Forwarding    80:00:00:e0:78:00:fa:91    0    80:00:00:e0:78:00:fa:91    21    1    0    7,424
  1a5    Forwarding    80:00:00:e0:78:00:fa:91    0    80:00:00:e0:78:00:fa:91    20    1    0    7,420
  1a6    Forwarding    80:00:00:e0:78:00:fa:91    0    80:00:00:e0:78:00:fa:91    19    1    0    7,424
  1a7    Forwarding    80:00:00:e0:78:00:fa:91    0    80:00:00:e0:78:00:fa:91    18    1    0    7,424

eCLI>

```

5.13 Static Routes

Figure 26 – Static Route Configuration Table

```

Berkeley Networks, inc. eCLI Utility, Build 4.0.0.1 Tue May 12 17:30:07 1998, Connected to Node: nsc-ursa-minor, State: Running
eCLI> show static-route config
Static Route Configuration Table for node (nsc-ursa-minor)
  Destination      Network Mask      Gateway Metric   Interface   Adapter Name
eCLI> _

```

5.14 Transparent Bridge

Figure 27 – Learning Bridge Configuration

```

Berkeley Networks, inc. eCLI Utility, Build 4.0.0.1 Tue May 12 17:30:07 1998, Connected to Node: nsc-ursa-minor, State: Running
eCLI> show ip cfg
config Number of Entries: (7) Node:(nsc-ursa-minor)
  Address  Port      Mask      Mode
  10.0.0.20 1a16     255.255.252.0  Enabled
  10.0.5.1  1a2      255.255.255.0  Enabled
  10.0.8.1  2a16     255.255.248.0  Enabled
  10.3.1.2  2a9      255.255.255.0  Enabled
  10.3.2.1  2a1      255.255.255.0  Enabled
  10.4.0.1  1a9      255.255.0.0    Enabled
  192.168.0.254 2a15     255.255.255.0  Enabled
eCLI> show ip cfg adapter *
Adapter Configuration Number of Entries: (0) Node:(nsc-ursa-minor)
  Address  Adapter      Mask      BCastAddr      Gateway  DHCP-Mode
eCLI> show ip cfg port all
config Number of Entries: (7) Node:(nsc-ursa-minor)
  Address  Port      Mask      Mode
  10.0.0.20 1a16     255.255.252.0  Enabled
  10.0.5.1  1a2      255.255.255.0  Enabled
  10.0.8.1  2a16     255.255.248.0  Enabled

```

Figure 28 – Learning Bridge Forwarding Table

```
Berkeley Networks, inc. eCLI Utility, Build 4.0.0.1 Tue May 12 17:30:07 1998, Connected to Node: nsc-ursa-minor, State: Running
eCLI> show lb fwd-table
Bridge Forwarding Table  Number of Entries: (116)  Node:(nsc-ursa-minor)
      Mac Address      Port      State
00:40:05:36:61:49     1a6      Learned
00:a0:c9:37:42:ee     1a6      Learned
00:80:c7:5e:cd:d5     1a6      Learned
00:80:c7:6c:cd:d5     1a5      Learned
00:60:97:83:b8:bb     1a4      Learned
00:c0:4f:8c:63:1a     1a3      Learned
00:c0:4f:8c:63:3f     1a6      Learned
00:60:97:04:31:97     1a6      Learned
00:40:05:36:8b:40     1a6      Learned
00:40:05:37:2c:c1     1a6      Learned
00:c0:4f:8f:27:4f     1a6      Learned
00:c0:4f:93:c1:be     1a6      Learned
00:60:97:cf:4c:af     1a6      Learned
00:e0:78:00:00:35     1a6      Learned
00:e0:78:00:fc:48     1a6      Learned
00:a0:c9:6b:08:88     1a6      Learned
00:c0:4f:8c:63:4d     1a7      Learned
00:c0:4f:8f:14:df     1a10     Learned
00:60:97:ce:d3:8b     1a6      Learned
00:a0:24:d3:8a:f0     1a11     Learned
00:a0:c9:28:df:a5     1a13     Learned
00:40:05:37:19:d8     1a12     Learned
00:40:05:41:e4:72     1a13     Learned
00:60:97:59:d1:a6     1a13     Learned
```

6 Error Codes and Messages

Errors display from ESX-Cli in the following format:

```
ERROR (Code): "Error String"
```

All ESX-Cli error codes begin at a base of 0x10000000 and increment. Error codes returned from BSC begin at 0x20000000 and also increment. The following tables list the ESX-Cli and BSC error codes, error strings and a brief descriptive interpretation of the string.

6.1 ESX-Cli-Specific Error Codes

Code	String	Description
0x10000002	Memory Allocation Failure	Unable to allocate memory. System resources already used.
0x10000003	Invalid Command Line	Parser could not properly parse command line. No tokens matched.
0x10000004	Syntax Error, (xyz) is unknown	The command parser could not determine the proper context. The string enclosed within parenthesis contains either the command line or token which was unknown.
0x10000005	Display format error	The display function could not properly format a display string. Programming error.
0x10000006	Invalid Subsystem (%s).. Type help ? for list of valid subsystems	No valid subsystem target name was detected.
0x10000007	Invalid Instance Id (%s). Requires target port (ex. port 1a23).	The instance value could not be properly parsed. See section 1.6 for details.
0x10000008	Invalid parameter value (x) for attribute (x, y).	The value entered for an attribute has been detected to be out of range or of the wrong format. The attribute and its value pair are printed.
0x10000009	Missing or Invalid parameter	An invalid environment variable or enumeration type was detected.
0x1000000A	Syntax error, invalid flag(s) (%s)	A set of invalid qualifier flags were detected.

0x1000000B	Invalid command primitive (%s). Type help for list of valid commands	The first token on the command line is required to be a valid command primitive.
0x1000000C	Invalid slot number (%s) specified, out of range	The slot number entered was out of range for the chassis currently connected.
0x1000000D	Invalid chip instance specifier (%s), out of range	The chip instance specified does not exist.
0x1000000E	Invalid or missing target specifier (%s)	The Memory target specified does not exist
0x1000000F	Invalid module number (%s) specified, out of range	The module number (a,b,c,d) does not exist on the current line card on this slot.
0x10000010	Invalid connector number (%s) specified, out of range	The connector number does not exist on the current line card module in this slot.
0x10000011	Invalid port number (%s) specified, out of range	The port number specified is out of range.
0x10000012	Missing file name for Low Data Source	
0x10000013	Missing file name for High Data Source	
0x10000014	Missing Low Data File width parameter	
0x10000015	Invalid width parameter (%s), out of range	
0x10000016	Missing device specifier	
0x10000017	Cannot open low file	
0x10000018	Cannot open high file	
0x10000019	Low and high files don't match	
0x1000001A	LCP write error	
0x1000001B	LCP read error	
0x1000001C	Null Command line	Parser was called with a null command line.
0x1000001D	Error reading from script file (%s)	

0x1000001E	Failure connecting to node (%s)	Unable to communicate with target node using RPC service. Try using IP address instead of Wins/DNS name.
0x1000001F	Missing script file name on command line	
0x10000020	Cannot open script file (%s)	
0x10000021	Missing log file name from command line	
0x10000022	Cannot open log file (%s)	
0x10000023	Command has no attributes, incomplete command (%s)	
0x10000024	Missing data word for LCP write operation	
0x10000025	Cannot open trace file (%s)	
0x10000026	Unable to write command line to script file (%s)	
0x10000027	The address specified for an LCP command is invalid	
0x10000028	Loop detected in list walk	
0x10000029	Invalid Attribute keyword (%s)	
0x1000002A	Failure disconnecting from node (%s)	
0x1000002B	Failure converting node name (%s) to UNICODE	
0x1000002C	Unable to open WinSock - Error code %d	
0x1000002D	Cannot determine the data width or the address increment for the address	LCP specific error code
0x1000002E	Invalid Environment variable specified (%s)	
0x1000002F	Invalid Debug mode specified (%s)	

0x10000030	No Debug mode specified, use [ON, OFF]	
0x10000031	Invalid Trace mode specified (%s)	
0x10000032	No Trace mode specified, use [ON, OFF]	
0x10000033	Invalid COM Port specified (%s)	
0x10000034	No COM Port specified, use [COM1, COM2, ETHER]	
0x10000035	Atomic operation already in process	
0x10000036	Attempting to clear atomic flag which was already cleared	
0x10000037	Another client has stolen the lock, all SET operations flushed	
0x10000038	Unable to override lock	
0x10000039	The script file (%s) is already open, nesting scripts not allowed	
0x1000003A	Data validation failed	
0x1000003B	The (%s) command is not support for subsystem (%s)	
0x1000003C	Wrong file format	
0x1000003D	Bad argument	
0x1000003E	Missing file name	
0x1000003F	Missing configuration file (%s)	
0x10000040	Cannot open configuration file (%s)	
0x10000042	Open File stack exceeded at (%d); files currently open	
0x10000043	Error attempting to run CL.EXE	

0x10000044	Invalid group number (%d), out of range, max of %d groups supported	
0x10000045	Unable to start the Routing Service on node (%s)	
0x10000046	Unable to stop the Routing Service on node (%s)	
0x10000047	Command cancelled by user	
0x10000048	Cannot open Berkeley Transport	
0x10000049	Cannot determine MTU	
0x1000004A	Cannot determine local MAC address	
0x1000004B	Cannot get the switch's MAC address	
0x1000004C	Cannot start Berkeley Transport	
0x1000004D	Cannot create event	
0x1000004E	Cannot open COM port	
0x1000004F	Display object missing	
0x10000050	Aborting...	User has initiated abort. Non fatal error.
0x10000051	Invalid adapter number (%d). Value between 1 and %d	
0x10000052	Cannot open the flash image file (%s)	The flash image file cannot be found. Be sure it exists in the default directory c:\winnt\system32 or specified path.
0x10000053	Null or invalid Ethernet MAC address entered (%s)	MAC Address entered as zero. Must be 6 bytes separated with colons. ie: 12:34:56:78:9a:bc
0x10000054	Null or invalid IP address entered (%s)	Invalid IP address format either 0.0.0.0 or non-dotted notation. Re-enter in dotted notation.
0x10000055	Invalid broadcast address	Ensure address is entered in proper dotted notation as: 255.255.254.0 for example.

0x10000056	Invalid gateway address entered.	Ensure it's entered in proper dotted notation. Must be host not network address.
0x10000057	Invalid subnet mask entered	Ensure it's entered in proper dotted notation.
0x10000058	The IP Address is not present on port	The IP Address entered has not been configured on the specified port.
0x10000059	Unable to delete (%s), no matching entries found.	The IP Address cannot be found in the list of configured addresses.
0x1000005A	The attribute (%s) is in the wrong context for command (%s %s)	An attribute used only for configuration was used for display/show or vice versa.
0x1000005B	Port does not exist for slot(%d) mod(%d) con(%d) use show %s config port all	The specified port cannot be found in the list of configuration records for the subsystem.
0x1000005C	Routing service is not running on node (%s)	The command requires BSC and Routing service to be running and currently is not. Use the Start command to complete command.
0x1000005E	Invalid network mask. The destination address is more specific than the network mask.	Re-enter the network's mask to match the granularity of the destination address.
0x1000005F	The supplied route metric is out of range.	Re-enter value between 1 and 32767
0x10000060	Cannot start the Berkeley Switch Code Compiler (SCC) service on node (%s)	The BSC process was unable to be started.
0x10000061	Cannot stop the Berkeley Switch Code Compiler (SCC) service on node (%s)	The BSC process was unable to be stopped.
0x10000062	Unable to manage node (%s), Routing and Switch services not installed.	The Routing and BSC services have been removed as services from the NSC.
0x10000063	IP Routing has not been configured on port	Configuration attempt failed. Configure IP routing for this port before retrying command.
0x10000064	Route %s/%s not found on port	Unable to delete this route.

0x10000065	No Static Route info found for port	Static Routing configuration record has not been found for this port.
0x10000066	No IP Global Info records found	Indicates a synchronization problem between BSC and Registry.
0x10000067	No IP Protocol Records found	Indicates a synchronization problem between BSC and registry.
0x10000068	No Interface Info found	Interface records exist in BSC but not in registry. Synchronization error.
0x10000069	Interface name not found	The interface name, which matches the entered port, cannot be found. Synchronization error.
0x1000006A	No Interface header records	BSC and registry synchronization error.
0x1000006B	No (%s) configuration records for port	The protocol configuration record does not exist within the registry but does within BSC.
0x1000006C	No IP Interface info records	The IP Protocol record within the registry is not present for the interface port.
0x1000006D	No IP Global configuration records	The registry does not contain the necessary IP Global configuration records.
0x1000006E	Detected corrupted IP Info record	A corrupted record was detected within the router registry. Restore to defaults is advised.
0x1000006F	Invalid OSPF password entered.	Password must be between 1 and 8 bytes in length. Warning... entered in clear text !!
0x10000070	Slot (%d) has no media card Module (%c)	User has attempted to access a media card that does not exist on a line card within the current chassis.
0x10000071	Slot (%d) is not available, max slots (%d), online slots are: ...	The user attempted to access a slot that does not exist or is offline. Refer to the displayed list of available slots.
0x10000072	Connector is out of range for module	The user attempted to access a connector on a line card that does not exist. Refer to the displayed list of available connectors.
0x10000073	The protocol record was not found.	The registry does not contain the protocol record for this operation.

0x10000074	Cannot create an Area-Range when Area (%s) has not been configured	Configure the Area first before Area-Range.
0x10000075	No Areas have been configured	Operation cannot be completed until at least one area has been created.
0x10000076	No backbone area has been configured. Area 0.0.0.0 not found.	Configure a backbone area before retrying the command.
0x10000077	Endpoints of a virtual link have to be area border routers.	Refer to OSPF manual for configuration help.
0x10000078	Transit area for virtual link cannot be backbone area zero.	Refer to OSPF manual for configuration help
0x10000079	Cannot configure a virtual interface on a stub area	Refer to OSPF manual for configuration help
0x1000007A	Transit area (%s) not found	Check the transit area address to be sure it has been configured.
0x1000007B	Area Range (%s) has greater resolution than Net (%s)	Check the range net mask.
0x1000007C	No RIP Protocol records found.	Either RIP has not been configured or there is a synchronization error between Registry and BSC.
0x1000007D	Multi-Link does not exist for (%d)	use show pmap configmlink all
0x1000007E	Bridge Group does not exist for (%d)	use 'show pmap config group all
0x1000007F	Management API returned a NULL buffer on get operation	Unknown reason. Possible that remote node has gone offline during RPC.
0x10000080	LCP Flash image mismatch	The LCP failed to verify the flash image
0x10000081	Multicast address is not allowed for Bridge ID	Re-enter the Bridge ID with MultiCast bit cleared
0x10000082	Invalid RIP Password detected.	Entered as ASCII string that is 16 characters or less.
0x10000083	Route filter missing from address in dotted notation	Proper syntax is a.b.c.d to w.x.y.z

0x10000084	Route filter missing to address in dotted notation	Proper syntax is a.b.c.d to w.x.y.z
0x10000085	Cannot open LPT1 to remote powercycle	The line printer port is hung and cannot be opened.
0x10000086	Cannot write to LPT1 for remote powercycle.	The line printer port is hung or unavailable.
0x10000087	Off-time specified is too short. Must be >= 1 second	Re-enter off-time from 1 to 'n' seconds
0x10000088	No filename or path specified.	Proper syntax is: >load [drive:\path\]filename
0x10000089	Cannot configure stub area on backbone area-id 0.0.0.0	The OSPF area 0.0.0.0 cannot be set as a stub
0x1000008A	Must specify slot number here. Value between 1 and %d	Re-enter command with instance identifier including slot number.
0x1000008B	Failed to powercycle; the switch is still up	Check the powercycle relay box.
0x1000008C	Invalid parameter value (%s) for attribute (%s)	Valid error message only in context of an LCP command.
0x1000008D	LCP flash not programmed	Retry or replace flash chip.
0x1000008E	Error in free list walk	Valid error message only in context of an LCP command.
0x1000008F	Invalid table flush option(%s)	Users can only flush bridge or ip-hosts table. Wildcard accepted.
0x10000090		Cannot start snmp
0x10000091		Cannot stop snmp
0x10000092		Cannot write cfg file
0x10000093		Cannot start snmptrap
0x10000094		Cannot stop snmptrap
0x10000095		Cannot pause ekap
0x10000096		Cannot start ekap
0x10000097		Cannot stop ekap

0x10000098		Miss trunk group
0x10000099		Cannot add trunk group
0x1000009A		Miss trunk port
0x1000009B		Cannot find trunk group
0x1000009C		Port not found in l2group
0x1000009D		L1group not found in l2group
0x1000009E		Invalid ip adapter
0x1000009F		No appl filter name
0x100000A0		No appl filter type
0x100000A1		No appl filter proto
0x100000A2		No appl filter sports
0x100000A3		No appl filter cports
0x100000A4		No appl filter snames
0x100000A5		Too many ports
0x100000A6		Invalid range
0x100000A7		Too large
0x100000A8		Too many servers
0x100000A9		No policy filter name
0x100000AA		No policy filter type
0x100000AB		No policy filter state
0x100000AC		No policy filter action
0x100000AD		Bad giga speed
0x100000AE		Bad giga duplex
0x100000AF		No gateway
0x100000B0		No filter application name

0x100000B1		Too many filters per policy
0x100000B2		Invalid policy filter weight
0x100000B3		No policy filter found
0x100000B4		No policy port cfg
0x100000B5		Invalid policy type with action
0x100000B6		No policy target port
0x100000B7		Loopback not allowed
0x100000B8		No intf for ospf nbr
0x100000B9		Unknown protocol record
0x100000BA		Cannot open file
0x100000BB		Missing file
0x100000BC		Bad time format
0x100000BD		Bad date format
0x100000BE		Cannot find ip trunk group
0x100000BF		History substitution failed
0x100000C0		No snmp trap poll value
0x100000C1		Unknown ospf protocol filter
0x100000C2		No policy filter owner
0x100000C3		Invalid policy port
0x100000C4		Miss policy port
0x100000C5		Miss acct name
0x100000C6		Ipnet already cfg
0x100000C7		Too long string
0x100000C8		No filter owner

6.2 BSC Error Codes

The following table displays the error codes, error strings, and brief descriptive interpretation of error codes returned from BSC. Errors returned from BSC are usually indicative of configuration errors. They may be due to resource problems, or client locking conflicts. Where possible the error text displayed will identify the reason for the error.

Base codes for BSC errors begin at 0x20000000 and increment. Each configurable subsystem has a unique base error code as does each configurable attribute within a subsystem.

Code	String	Description
0x20000000	Generic Error	Should never occur, indicates incomplete BSC error processing.
0x20000001	Unknown Error	BSC cannot figure out what has caused error
0x20000002	Unknown Record Type	The configuration or statistics record request is not recognized by BSC.
0x20000003	Record does not exist	The configuration or statistics record requested does not exist.
0x20000004	Missing client lock key	A configuration request to BSC does not contain a valid locking key.
0x20000005	Locked owned by another client	The configuration request has been rejected since the lock is currently owned by another client process.
0x20000006	Supplied lock is invalid	The lock key value supplied does not match current value in BSC.
0x20000007	Invalid Record Pointer	BSC Internal error. Pointer to data structure is invalid.
0x20000008	IPC Unable to allocate resource	BSC management interface cannot allocate memory resource for communication.
0x20000009	Invalid Operation	BSC reports the requested operation is not valid in current operating context.
0x20000010	Requested operation is not supported at this time.	Indicates support not available for this release

0x20000011	Invalid Parameter	Indicates one of the configuration attributes is incorrect. Range or enumeration error.
0x201000xx	Invalid parameter for Lock Configuration record	Parameter within lock configuration record is incorrect.
0x202000xx	Invalid parameter for Chassis Configuration record.	One of the configuration parameters for the chassis config record is incorrect.
0x203000xx	Invalid parameter for Card Configuration record.	One of the configuration parameters for the card config record is incorrect.
0x20300001	Invalid slot number for card	The slot number specified for the card configuration record is out of range for the target chassis.
0x20300002	Invalid card ID	The card type specified is not supported by the chassis.
0x204000xx	Invalid parameter for PortMap record	One of the configuration parameters for the PortMap record is incorrect.
0x20400001	Port out of range	The logical port number specified is out of range for this chassis or does not exist.
0x20400002	Invalid PortMap type field.	The type field was not Physical, L2Group or L1Group.
0x20400003	Invalid L1 Group value	The L1Group value does not exist or is out of range (>1024).
0x20400004	Invalid L2 Group value	The L2Group value does not exist or is out of range (>1024).
0x20400005	Invalid PortMap slot number	The slot number supplied is not present on this chassis or is out of range.
0x20400006	Invalid PortMap module	The module number supplied is out of range.
0x20400007	Invalid PortMap connector number	The connector number supplied is out of range for this card type.
0x20400008	Invalid PortMap virtual circuit number	The VC attribute value is out of range. (currently not supported).
0x20400009	Invalid PortMap ifIndex value	The ifIndex value is out of range. Must be within range of 1 to Max Number of Ports.
0x205000xx	Invalid IP Configuration parameter	One or more of the IP configuration parameters supplied is incorrect.

0x20500001	Invalid IP Address	The IP Address supplied is not valid for this port. It may already exist.
0x20500002	Invalid IP Port number	The port number supplied does not exist.
0x20500003	Invalid IP Subnet mask	The supplied subnet mask is greater than the IP address supplied, or results in an overlap of IP Address space with existing configuration.
0x20500004	Invalid IP Mode	Mode attribute is set to something other than enabled/disabled.
0x206000xx	Invalid ARP Configuration parameter	One or more of the ARP configuration parameters are incorrect.
0x20600001	Invalid IP Address entered for ARP configuration record	The IP Address supplied does not exist
0x20600002	Invalid Port Number entered for ARP configuration record	The port number supplied does not exist on target chassis.
0x20600003	Invalid MAC Address	The MAC Address supplied is all zero or is a MultiCast address.
0x20600004	Invalid ARP Encaps type	The encapsulation type field contains a value that is not LLC, DIX or SNAP.
0x20600005	Invalid ARP QOS value	The QOS value supplied must be Berkeley, Network, High or Best.
0x207000xx	Invalid Ethernet configuration parameter	One or more of the configuration parameters are incorrect.
0x20700001	Port number is invalid for Ethernet Configuration	The port number supplied does not exist on target chassis.
0x20700002	Ethernet mode enumeration is out of range	Ethernet mode can be only enabled/disabled.
0x20700003	Invalid Ethernet speed configuration	The Ethernet speed supplied is not supported for this interface
0x20700004	Invalid Ethernet Duplexity configuration.	The Ethernet Duplex mode can only be Auto, Full or Half.
0x20700005	Invalid Ethernet MTU size specified	The MTU size entered is not supported for the target port.
0x208000xx	Invalid parameter for LCP configuration	One or more of the LCP configuration parameters is incorrect.

0x20800001	Invalid LCP Slot number	The slot number passed in for the LCP configuration record is out of range for the target chassis.
0x209000xx	Invalid Bridge configuration parameter	One or more of the Bridge configuration parameters is incorrect.
0x20900001	Invalid Bridge port number	The Bridge Port number does not exist.
0x20900002	Bridge configuration record contains invalid L2Group number.	The L2Group does not exist.
0x20900003	Bridge MAC Address is invalid	The Bridge MAC Address is not unique or contains a Multicast address
0x20900004	Unsupported Bridge Type	Currently only Transparent bridge is supported.
0x20A000xx	Invalid Spanning-Tree configuration parameter	One or more of the Spanning-Tree configuration parameters is incorrect.
0x20A00001	Invalid Spanning-Tree logical port	The port number specified does not exist on the target chassis.
0x20A00002	Invalid STP Bridge Group value	The L2 Group does not exist.
0x20A00003	Invalid STP priority value	The STP Priority value is out of range.
0x20A00004	Max-Age time our of range	The STP Max Age timeout is out of range.
0x20A00005	Hello-Time is out of range	The STP Hello Time is out of range.
0x20A00006	Forwarding Delay time out of range	The STP forwarding delay value is out of range.
0x20B000xx	Invalid STP Port configuration parameter	One or more of the STP Port configuration parameters is incorrect.
0x20B00001	Invalid port specified for STP	The port number specified does not exist on the target chassis.
0x20B00002	Invalid STP port priority value	The STP port priority value is out of range.
0x20B00003	Invalid STP port path cost	The STP port path cost metric is out of range.
0x20C000xx	Invalid Filter Configuration record parameter	One or more of the filter record parameters is incorrect.

7 LCP Debugging Operation

FORE Systems LCP Syntax

Command Primitives supported by LCP

Primitive	Shortcut	Description
read	rd	Perform LCP Read operations
write	wr	Perform LCP Write operations
config	cfg	Configure LCP parameters for slot
display	dis	Display statistics or config info, also used for asic debugging. see >help lcp dis
program	pgm	Program flash device on LCP slot
load	ld	Load data files into asics.

Configuration and Display attributes:

Attribute	Shortcut	Context	Description
status	stat	disp	Generate LCP status report
information	info	disp	LCP hw/sw info
errors	err	disp	LCP Error statistics
statistics	stats	disp	LCP counter statistics
baud-rate	baud	cfg	Configure UART baud rate
parity	par	cfg	Configure UART parity
stop-bits	stop	cfg	Configure UART stop bits
port-map	pm	cfg	Configure NSC Hello's on ports (Hex BitMask)

8 Examples of ESX-Cli Commands

This section gives examples of operations performed using the ESX-Cli utility. The following examples are presented:

- Example 1 -- sample configuration file for an ESX-2400(Ursa Minor)
- Example 2 -- sample syntax for Display or Show commands
- Example 3 -- sample syntax for DOS commands available in the ESX-Cli shell

Example 1 Sample Configuration File

```
#####  
#####  
#  
# FORE Systems    ESX-CLI Configuration File  
#  
# Nodename:      pulsar  
#  
# Filename:      sample.cfg  
# Created:       18:47:07 05/06/98  
#  
#  
begin  
#  
#  
set halt on  
#  
#  
# chassis Configuration Record(s)  
#  
#  
cd chassis  
#  
cfg chassis slot 1 Model Micro Unique-Id 0x0 Description "ESX-NIC" Contact "Doug T"  
Location "Milpitas"  
#  
# End chassis section  
#  
#  
# card Configuration Record(s)  
#  
#  
cd card  
#  
cfg card Slot 1 Card-Id 8TX  
#  
# End card section  
#  
#  
# port-map Configuration Record(s)  
#  
#  
cd port-map  
#  
cfg port-map port 1 type Physical mlink 0 group 0 slot 1 mod 1 con 1 vc 0 ifIndex 1  
cfg port-map port 2 type Physical mlink 0 group 0 slot 1 mod 1 con 2 vc 0 ifIndex 2  
cfg port-map port 3 type Physical mlink 0 group 0 slot 1 mod 1 con 3 vc 0 ifIndex 3  
cfg port-map port 4 type Physical mlink 0 group 0 slot 1 mod 1 con 4 vc 0 ifIndex 4  
cfg port-map port 5 type Physical mlink 0 group 0 slot 1 mod 1 con 5 vc 0 ifIndex 5  
cfg port-map port 6 type Physical mlink 0 group 1 slot 1 mod 1 con 6 vc 0 ifIndex 6  
cfg port-map port 7 type Physical mlink 0 group 1 slot 1 mod 1 con 7 vc 0 ifIndex 0  
cfg port-map port 8 type Physical mlink 0 group 0 slot 1 mod 1 con 8 vc 0 ifIndex 0  
cfg port-map port 9 type L2Group mlink 0 group 1 slot 0 mod 0 con 0 vc 0 ifIndex 0  
#  
# End port-map section  
#  
#  
# ethernet Configuration Record(s)
```

```
#
#
cd ethernet
#
cfg ethernet Port 1a1 State Enabled Speed 100Mb Duplex Auto
cfg ethernet Port 1a2 State Enabled Speed 100Mb Duplex Auto
cfg ethernet Port 1a3 State Enabled Speed 100Mb Duplex Auto
cfg ethernet Port 1a4 State Enabled Speed 100Mb Duplex Auto
cfg ethernet Port 1a5 State Enabled Speed 100Mb Duplex Auto
cfg ethernet Port 1a6 State Enabled Speed 100Mb Duplex Auto
cfg ethernet Port 1a7 State Enabled Speed 100Mb Duplex Auto
cfg ethernet Port 1a8 State Enabled Speed 100Mb Duplex Auto
#
# End ethernet section
#
#
# bridge Configuration Record(s)
#
#
cd bridge
#
cfg bridge Group 1 Name "Bridge 1" Bridge-ID 00:e0:78:00:00:01 Ports 2 Type Transparent
cfg lb port 1a6 group 1
cfg lb port 1a7 group 1
#
# End bridge section
#
#
# spanning-tree Configuration Record(s)
#
#
cd spanning-tree
#
cfg spanning-tree Group 1 Priority 32768 Max-Age 20 Hello-Time 2 Fwd-Delay 15
cfg spanning-tree Port 1a6 Port-Priority 128 State Enabled Cost 10
cfg spanning-tree Port 1a7 Port-Priority 128 State Enabled Cost 10
#
# End spanning-tree section
#
#
# ip Configuration Record(s)
#
#
cd ip
#
cfg ip Address 10.60.1.6/24 Mode Enabled Port 1a1
cfg ip Address 10.60.2.6/24 Mode Enabled Port 1a2
cfg ip Address 10.60.3.6/24 Mode Enabled Port 1a3
cfg ip Address 10.60.4.6/24 Mode Enabled Port 1a4
cfg ip Address 10.60.5.6/24 Mode Enabled Port 1a5
cfg ip Address 10.60.6.6/24 Mode Enabled Port 1a6
cfg ip Address 10.4.2.8/16 Broadcast 0.0.0.0 Gateway 10.4.0.1 DHCP-Mode Enabled Adapter 2
#
# End ip section
#
#
# arp Configuration Record(s)
#
#
cd arp
#
cfg arp Address 1.2.3.4 Port 1a5 Mac-Address 00:00:e0:00:12:32 Encaps LLC Type Static QOS
High
cfg arp Address 4.3.2.1 Port 1a6 Mac-Address 00:00:e0:00:12:34 Encaps LLC Type Static QOS
Best
cfg arp Address 101.244.3.1 Port 1a5 Mac-Address 00:00:ff:ff:12:34 Encaps DIX Type Static
QOS Berkeley
#
# End arp section
#
#
# rip Configuration Record(s)
#
#
```

```
cd rip
#
#
# RIP Global Record
#
cfg rip global log-level error update 5
#
# RIP Interface Record
#
cfg rip interface port la5 cost 1 update periodic accept RIP1 announce RIP1 expire 180
remove 120 periodic 30 auth disabled tag 0 peer-filter disabled accept-filter include
announce-filter disable
cfg rip interface port la1 cost 1 update periodic accept RIP1 announce RIP1 expire 180
remove 120 periodic 30 auth disabled tag 0 peer-filter disabled accept-filter include
announce-filter disable
cfg rip interface port la2 cost 1 update periodic accept RIP1 announce RIP1 expire 180
remove 120 periodic 30 auth disabled tag 0 peer-filter only accept-filter include
announce-filter disable
cfg rip interface port la3 cost 1 update periodic accept RIP1 announce RIP1 expire 180
remove 120 periodic 30 auth disabled tag 0 peer-filter also accept-filter disable
announce-filter disable
cfg rip interface port la4 cost 1 update periodic accept RIP1 announce RIP1 expire 180
remove 120 periodic 30 auth disabled tag 0 peer-filter only accept-filter disable
announce-filter disable
#
# RIP Interface Accept Filters Records
#
add rip accept-filter mode include filter from 132.4.5.6 to 133.1.1.1 port la5
add rip accept-filter mode include filter from 1.1.1.1 to 3.3.3.3 port la1
add rip accept-filter mode include filter from 6.6.6.6 to 8.8.8.8 port la1
add rip accept-filter mode include filter from 10.10.10.10 to 11.11.11.11 port la2
add rip accept-filter mode include filter from 0.0.0.0 to 80.190.51.0 port la2
add rip accept-filter mode disable filter from 200.200.200.200 to 201.201.201.201 port la4
#
# RIP Interface Announce Filters Records
#
#
# RIP Interface Unicast Peer Filter Records
#
add rip unicast-peer mode only filter 101.1.1.1 port la2
add rip unicast-peer mode only filter 102.1.1.1 port la2
add rip unicast-peer mode only filter 103.1.1.1 port la2
add rip unicast-peer mode also filter 20.1.1.1 port la3
add rip unicast-peer mode also filter 30.1.1.1 port la3
add rip unicast-peer mode only filter 101.32.4.5 port la4
add rip unicast-peer mode only filter 196.32.4.6 port la4
#
# RIP Interface Protocol Records
#
cfg rip protocol split poison cl tu port la5
cfg rip protocol split poison cl tu port la1
cfg rip protocol split poison cl tu port la2
cfg rip protocol split poison cl tu port la3
cfg rip protocol split poison cl tu port la4
#
# RIP Interface Timers Records
#
cfg rip timers periodic 30 expire 180 remove 120 port la5
cfg rip timers periodic 30 expire 180 remove 120 port la1
cfg rip timers periodic 30 expire 180 remove 120 port la2
cfg rip timers periodic 30 expire 180 remove 120 port la3
cfg rip timers periodic 30 expire 180 remove 120 port la4
#
# End rip section
#
#
# ospf Configuration Record(s)
#
#
cd ospf
#
#
# OSPF Global Record
#
```

```
cfg ospf global router-id 10.60.0.1 asbr Disabled log-level Warning
#
# OSPF Protocol Filters
#
cfg ospf protocol-filter action only id rip
#
# OSPF Route Filters
#
#
# OSPF Area Records
#
cfg ospf area area-id 20.20.20.20 auth-type Simple stub No metric 0 import Yes
cfg ospf area area-id 0.0.0.0 auth-type Simple stub No metric 0 import No
cfg ospf area area-id 30.30.30.30 auth-type Simple stub Yes metric 0 import Yes
cfg ospf area area-id 10.10.10.10 auth-type Simple stub No metric 0 import No
#
# OSPF Area Range Records
#
cfg ospf area-range area-id 10.10.10.10 range-net 1.2.3.0 range-mask 255.255.255.0
cfg ospf area-range area-id 10.10.10.10 range-net 10.60.0.0 range-mask 255.255.0.0
#
# OSPF Interface Records
#
cfg ospf interface port la5 address 10.60.5.6 mask 255.255.0.0 area-id 10.10.10.10 type
Broadcast priority 1 tdly 14 retrans-int 20 hello-int 30 dead-int 40 poll-int 50 cost 2
password 12345678 mtu 1500
cfg ospf interface port la6 address 10.60.6.6 mask 255.255.0.0 area-id 0.0.0.0 type
Broadcast priority 1 tdly 15 retrans-int 20 hello-int 30 dead-int 40 poll-int 50 cost 2
password 12345678 mtu 1500
cfg ospf interface port la1 address 10.60.1.6 mask 255.255.0.0 area-id 0.0.0.0 type
Broadcast priority 1 tdly 10 retrans-int 20 hello-int 30 dead-int 40 poll-int 50 cost 2
password 12345678 mtu 1500
cfg ospf interface port la2 address 10.60.2.6 mask 255.255.0.0 area-id 0.0.0.0 type
Broadcast priority 1 tdly 11 retrans-int 20 hello-int 30 dead-int 40 poll-int 50 cost 2
password 12345678 mtu 1500
cfg ospf interface port la3 address 10.60.3.6 mask 255.255.0.0 area-id 0.0.0.0 type
Broadcast priority 1 tdly 12 retrans-int 20 hello-int 30 dead-int 40 poll-int 50 cost 2
password 12345678 mtu 1500
cfg ospf interface port la4 address 10.60.4.6 mask 255.255.0.0 area-id 0.0.0.0 type
Broadcast priority 1 tdly 13 retrans-int 20 hello-int 30 dead-int 40 poll-int 50 cost 2
password 12345678 mtu 1500
#
# OSPF Neighbor Records
#
cfg ospf neighbor port la5 nbr-address 10.60.5.99 address 10.60.5.6 priority 21
cfg ospf neighbor port la2 nbr-address 10.60.2.20 address 10.60.2.6 priority 12
#
# OSPF Virtual Interfaces Records
#
cfg ospf virtual transit-area-id 20.20.20.20 nbr-rtr-id 10.60.2.40 transit-delay 99
retrans-int 55 hello-int 30 dead-int 20 password 456789;;
cfg ospf virtual transit-area-id 20.20.20.20 nbr-rtr-id 10.60.2.30 transit-delay 99
retrans-int 55 hello-int 30 dead-int 20 password 23456789
cfg ospf virtual transit-area-id 20.20.20.20 nbr-rtr-id 10.60.2.60 transit-delay 99
retrans-int 55 hello-int 30 dead-int 20 password 12345678
cfg ospf virtual transit-area-id 20.20.20.20 nbr-rtr-id 10.60.2.50 transit-delay 99
retrans-int 55 hello-int 30 dead-int 20 password 3456789;
#
# End ospf section
#
#
# static-route Configuration Record(s)
#
#
cd static-route
#
cfg Static-Route Destination 1.2.3.0/24 Gateway 10.60.5.6 Metric 22 port la5
cfg Static-Route Destination 2.3.4.0/24 Gateway 10.60.5.6 Metric 44 port la5
cfg Static-Route Destination 4.3.0.0/16 Gateway 10.60.6.6 Metric 99 port la6
#
# End static-route section
#
#
# bsc Configuration Record(s)
```

```
#
#
cd bsc
#
cfg bsc mgt-all slot 1

#
# End bsc section
##
end
#
# End of configuration file
#
```

Example 2 Sample Display or Show Commands

```
#####
##
## Chassis show
##
#####
show ch slot 1 config
show ch slot 1 status
#####
##
## Line Card show
##
#####
show card config slot 1
show card config slot all
show card status slot 2
show card status slot all
#####
##
## Port Map show
##
#####
show pmap slot 1 config
show pmap group 1 config
show pmap config port *
#####
##
## Ethernet show
##
#####
cd enet
show enet config port *
show enet config slot 1
show enet config slot 1 module 1
show enet packets port 1a1
show enet packets slot 1
show enet packets slot 1 module 2
show enet packets port *
show enet octets port 1a1
show enet octets slot 1
show enet octets slot 1 module 2
show enet octets port *
show enet errors port 1a1
show enet errors slot 1
show enet errors slot 1 module 2
show enet errors port *
show enet colls port 1a1
show enet colls slot 1
show enet colls slot 1 module 2
show enet colls port *
show enet link port all
#####
##
## Bridge show
##
```

```
#####
cd lb
show lb config group 1
show lb config group all
show lb packets port 1a1
show lb packets group 1
show lb packets group 1 slot 1
show lb packets group 1 slot 1 module 2
show lb packets port *
show lb octets port 1a1
show lb octets group 1
show lb octets group 1 slot 1
show lb octets group 1 slot 1 module 1
show lb octets port *
#show lb fwd-table group 1
#####
##
## Spanning Tree show - TBA
##
#####
show spt config group 1
show spt config group all
show spt config port 1a1
show spt config port *
show spt stats port 1a1
show spt stats port all
#####
##
## IP show
##
#####
cd ip
show ip config slot *
show ip config slot 3
show ip config slot 3 module 2
show ip config address 233.1.1.1
show ip config adapter all
show ip config port all
#
#
show ip stats port all
show ip stats port all slot 4
show ip stats port all slot 3 module a
show ip stats port 3b12
show ip stats adapter all
show ip stats adapter 3
#
show ip errors port all
show ip errors port all slot 3
show ip errors port all slot 3 module b
show ip errors port 3b12
show ip errors adapter all
show ip errors adapter 3
#
show ip tcp-stats adapter 1
show ip udp-stats adapter 1
show ip icmp-stats adapter 1
show ip fwd-table
show arp-table
show tcp-table
show udp-table
show if-table
#
```

Example 3 Sample DOS Commands

```
#####  
##  
## DOS Primitives Section  
##  
#####  
cd  
ld doscmd.txt  
#  
set more off  
set lines 0  
#  
show sys log slot all  
show app log slot all  
#  
  
----- =_NextPart_000_01BCFFDD.B89F6380  
Content-Type: text/plain;  
    name="doscmd.txt"  
Content-Disposition: attachment;  
    filename="doscmd.txt"  
  
#  
# Title:  doscmd.txt  
#  
# Description:  
#  
# Simple axmon script to exercise ping, traceroute, arp commands  
#  
arp -a  
show ip arp-table  
#  
ping crystal  
ping gold  
ping jack  
ping jill  
ping onyx  
ping pearl  
ping marble  
ping turquoise  
ping sapphire  
#  
arp -a  
show ip arp-table  
#  
traceroute -h 2 jack  
traceroute -h 2 sapphire  
traceroute -h 2 scp_alpha  
#  
#  
dir  
type delete.txt  
copy delete.txt foo.txt  
ipconfig /all  
rename foo.txt foo.foo  
type foo.foo  
#
```